



**OIML Member State**  
SLOVAKIA

**OIML Certificate No.**  
R49/2013-A-SK1-2023.06

## 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: Dušan Šmigura, Director of PCB

### Applicant

Name: **Zhejiang Diyuan Instrument Co., Ltd.**  
Address: No. 106, Chunhan Road, Beiyuan Subdistrict, Yiwu, Zhejiang, P.R. China

### Manufacturer

Name: **Zhejiang Diyuan Instrument Co., Ltd.**  
Address: No. 106, Chunhan Road, Beiyuan Subdistrict, Yiwu, Zhejiang, P.R. China

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

Water meter type **YYD-S**

### Designation of the module

Electromagnetic 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: 2



**OIML Certificate No.**  
**R49/2013-A-SK1-2023.06**

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/CV006/312.15 dated 8<sup>th</sup> December 2023 that includes 50 pages.  
OIML Type Evaluation Report No. 2023/ER006/SK1 dated 8<sup>th</sup> December 2023 that includes 16 pages.

The technical documentation relating to the identified type is contained in documentation file name:  
„Technical documentation file Zhejiang Diyuan\_YYD-S\_00“ dated 8<sup>th</sup> December 2023 that includes a sum of documents 58 pages.

**OIML Certificate History**

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

Identification, signature and stamp

**The OIML Issuing Authority**



Dušan Šmigura

Date: 13<sup>th</sup> December 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 electromagnetic water meter **YYD-S** is designed to measuring, storing 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 YYD-S is residential compact electromagnetic water meter with electronic indication device.

The measurement is based on electromagnetic principle.

According to Faraday's law of electromagnetic induction a conductive liquid flow through an insulated pipe, generating a voltage signal at electrodes on both sides of the pipe under the action of internal magnetic field and is proportional to the fluid flow rate. The signal is amplified and filtered for accumulation - recording and output.

The water meter YYD-S can be installed to operate in horizontal position. When the instrument is installed on the pipeline, the instrument must be equipped with a ground electrode or a ground ring (Fig. 5).

The water meter is designed to measure the reverse flow.

## 2. Description

### 2.1 Parts of the water meter YYD-S

Essential parts:

Flow sensor:

- the electromagnetic transducer - the stainless-steel body with inlet and outlet;
- the two magnets for magnetic field and two measurement electrodes;
- the grounding wire on the flanges connected with the grounding device.

Calculator and indication device:

- the stainless-steel converter base connected with the electromagnetic transducer;
- the converter includes:
  - the PCB circuit board for transfer between sensors and the circuit boards;
  - the PCB circuit board for calculation and output;
  - the electronic LCD display with two lines (first line with 9 digits and indication range 99999,9999 m<sup>3</sup> for volume, second line with 5 digits m<sup>3</sup>/h for flow). The sub-multiples of a cubic meters are indicated on the LCD display after the decimal point and are indicated by a frame;
  - magnet with menu operation button;
  - the battery box - 4 pcs replaceable lithium batteries for flow rate (3,6 V and 76 Ah) and 2 pcs replaceable lithium batteries for data collector (3,6 V and 38 Ah), life of batteries 6 years.

Non-essential parts:

- communication type RS485;
- antenna.

### 2.2 Metrological functions

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



### 2.3 Operation and presentation of legal data

- a) the forward total measured volume ( $\text{m}^3$ );
- b) the reverse total measured volume ( $\text{m}^3$ );
- c) instantaneous flow rate ( $\text{m}^3/\text{h}$ ).

The following views are available on the scrolling display and by pressing a button as instructed in the User Manual:

- forward accumulation time (h);
- reverse accumulation time (h);
- display test (an “eights” test);
- display test (a “blanks” test);
- date;
- time;
- alarm;
- battery power;
- software version;
- checksum.

### 3. Software specification

The legally relevant software version and checksum for water meters YYD-S can be checked on the LCD display.

Software versions	Checksum	Remarks
2.14u	14230	-

Checksum and software version are visible in first line of display in form 14230214u:

- 14230 represents checksum
- 214u represents software version 2.14u

### 4. Accountable alarms

If a fault occurs or error in the communication or software the fault/error icon on the display will show and the meter can be interrogated by the LCD interface according to the user manual issued by the manufacturer.



Symbol	Description	Symbol	Description
	ATC alarm		Reverse flow
	Excitation cutoff alarm		Battery level
	Flow forward		Communication status

## 5. Technical and metrological data

Water meter type		YYD-S					
Accuracy class		2					
Nominal diameter DN	mm	40			50		
Permanent flowrate $Q_3$	m <sup>3</sup> /h	25			40		
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,250	0,156	0,100	0,400	0,250	0,160
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,400	0,250	0,160	0,640	0,400	0,256
Overload flowrate $Q_4$	m <sup>3</sup> /h	31,3			50		
Ratio $Q_3/Q_1$	R	100	160	250	100	160	250
Ratio $Q_2/Q_1$	-	1,6					
Connection thread	mm	Flange					
Construction length $L$	mm	200					
Installation orientation	-	H					
Water temperature range (temperature class)	°C	0,1 to 50 T50					
Maximum admissible pressure MAP	bar	16					
Pressure loss class $\Delta p$	bar -	0,40 $\Delta p$ 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 $\theta > 30^\circ\text{C}$ )					
Maximum permissible error in lower flowrates range $Q_1 \leq Q < Q_2$	%	$\pm 5$					
Capacity of calculator	m <sup>3</sup>	99999,9999					
Scale interval (normal resolution of the indicating device)	m <sup>3</sup>	0,0001					
Mechanical class	-	M1					
Climatic class	°C	- 40 to + 70					
Electromagnetic class	-	E2					
Environmental classification	-	O					
Flow profile sensitivity class	-	U5/D3					
Protection class		IP68					
Battery	-	replaceable li-battery 3,6 V, life time 6 years					

## 6. Marking and inscriptions

The following data shall be marked on the water meter:

- name or trademark of the manufacturer;
- type name of the water meter;
- unit of measurement m<sup>3</sup>;
- year of manufacture, the last two digits of the year of manufacture, or the month and year of manufacture;
- serial number;
- 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 ( $MAPI6$ );
- i) temperature class ( $T50$ );
- j) pressure loss class ( $\Delta p 40$ );
- k) the installation sensitivity class ( $U5/D3$ );
- l) for a replaceable battery: the latest date by which the battery 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.

## 7. Security measures

The water meters YYD-S shall be protected against unauthorized manipulation and opening by:

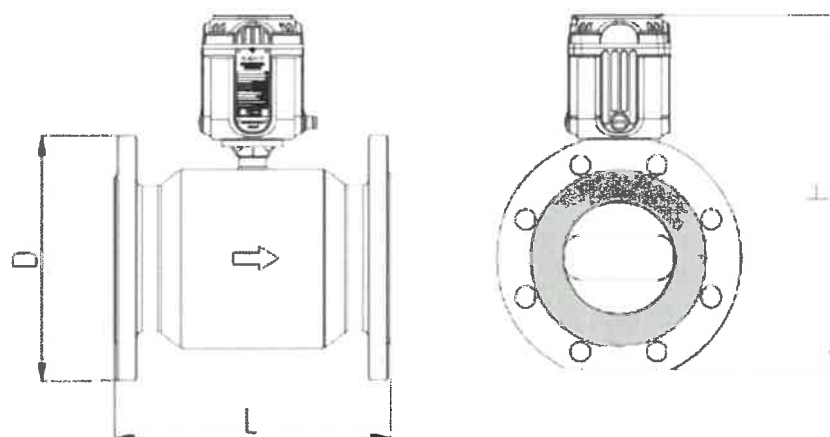
- one lead seal with the wire ensuring the connection of the converter base and the converter cover.

## 8. Figures



Fig. 1: Illustrative view of the water meter YYD-S





Diameter (mm)	Rated pressure (MPa)	reference dimension			Weight (Kg)
		L (mm)	H (mm)	D (mm)	
40	1.6	200	333	150	13
50	1.6	200	342	165	14

Fig. 2: Dimensions of the water meter YYD-S

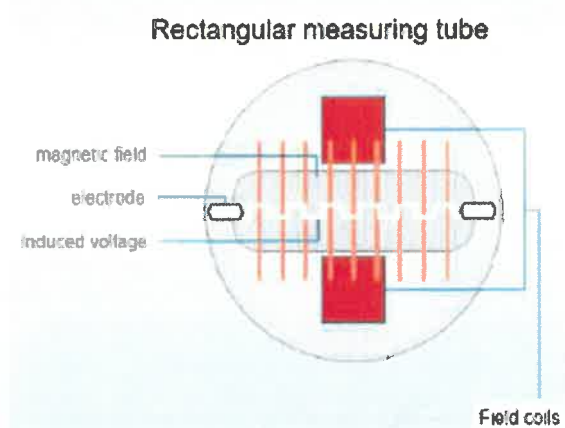
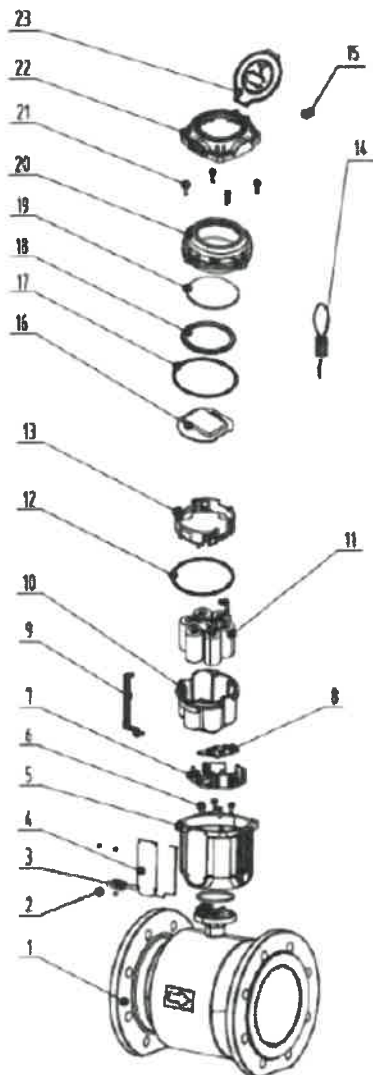


Fig. 3: The diagram of the internal structure of sensor







No.	Component	Quantity
1	Transducer	1
2	Nut bolt:M3*4	4
3	Antenna assembly	1
4	Nameplate	1
5	Converter base	1
6	Outer hexagonal bolt:M5*16	4
7	Transfer circuit board bracket	1
8	Transfer circuit board	1
9	Transfer circuit board cables	1
10	Battery box	1
11	Battery pack	1
12	O-ring:112*3.55	1
13	Circuit board bracket	1
14	Lead seal	1
15	Magnet steel	1
16	LCD circuit board	1
17	O-ring:90*3.55	1
18	Stainless steel ring nut	1
19	Glass	1
20	Converter cover	1
21	Hexagon socket bolt:6*14	4
22	Plastic protective cover	1
23	Dust cover	1

Fig. 4: Exploded view of water meter YYD-S

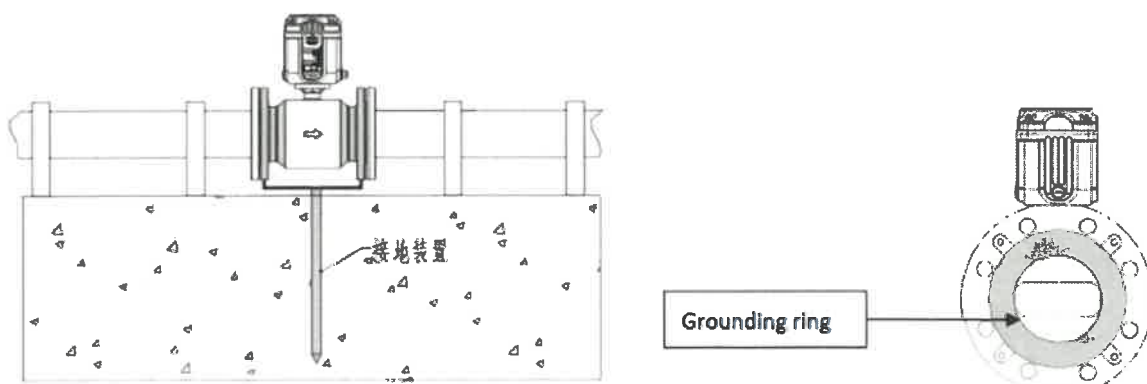


Fig. 5: Installation of water meter YYD-S with a ground electrode or a grout ring

