



OIML Member State
Czech Republic

OIML Certificate No.
R49/2013-A-CZ1-24.05

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: Czech Metrology Institute
Address: Okružní 31, 638 00 Brno, Czech Republic

Person responsible: Jan Kalandra

Applicant

Name: Ningbo Water Meter (Group) Co., Ltd.
Address: 355 Hongxing Road, Jiangbei District, Ningbo 315032, China

Manufacturer

Name: Ningbo Water Meter (Group) Co., Ltd.
Address: 355 Hongxing Road, Jiangbei District, Ningbo 315032, China

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

water meter - ultrasonic
UL-DW

Designation of the module *(if applicable)*

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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



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 reports:

- OIML type evaluation report No. 0511-ER-V067-22 dated 10th July 2024 that includes 32 pages including annex 1
- Test report No. 6015-PT-P5005-23 dated 2nd May 2023 that includes 75 pages including annexes 1, 2 and 3
- Test report No. 6011-PT-SW013-22 dated 16th December 2022 that includes 3 pages
- Test report No. 8551-PT-E0217-22 dated 19th October 2022 that includes 8 pages including annex 1

The technical documentation relating to the identified type is contained in documentation file:

0511-UL-V067-22

OIML Certificate History

Revision No.	Date	Description of the modification
-	22 July 2024	Issuing certificate

The OIML Issuing Authority

RNDr. Pavel Klenovský
Director of Certification Body

Date: 22 July 2024



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.

Measuring system description

The water meters type UL-DW are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer.

The water meters type UL-DW are ultrasonic water meters with an electronic indicating device.

The water meters type UL-DW consist of a brass body with screw threads, a pair of ultrasonic transducers and the electronic indicating device. The electronic indicating device is formed by an LCD display which is equipped with a photosensitive button. The display shows the delivered volume for forward flow as a default. Touching the button twice shortly switches to the delivered volume for reverse flow.

The checksum (CRC-32) of legally relevant software is shown on the display when the button is touched four times. Version of the legally relevant software is shown on the display when the button is touched five times. The software is protected by CRC-32, alarm codes system, E-SEAL model, passwords and terminal cover sealing.

The water meters type UL-DW are powered by a permanent battery with voltage 3.6 V and lifetime 16 years. The water meters shall be installed to operate in arbitrary orientation. They are designed to measure reverse flow.

The water meters type UL-DW can be equipped with M-Bus, wireless M-Bus or RS485 communication interfaces which are, however, not a part of this certificate.

Marking and inscriptions

The water meters type UL-DW shall be clearly and indelibly marked with the following information:

- Water meter type
- Unit of measurement (m³) (on display)
- Numerical value Q₃ in m³/h (Q₃ × ×) and the ratio Q₃ / Q₁
- OIML certificate of conformity number
- Manufacturer's name, registered trade name or registered trademark
- Year of manufacture, two last digits of the year of manufacture, or the month and year of manufacture
- Serial number (as near as possible to the indicating device)
- Direction of forward flow, by means of an arrow on both sides of the water meter body
- Maximum admissible pressure (MAP × ×)
- Temperature class (T × ×)
- Pressure loss class (Δp × ×)
- Installation sensitivity class (U × D ×)
- For a non-replaceable battery: the latest date by which the meter shall be replaced
- Environmental classification (O)
- Electromagnetic environmental class (E ×)
- Software version and checksum (on display)
- Hardware version (on display)

These markings shall comply with the requirements of OIML R 49 and shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use.

Table 1: Technical and metrological characteristics

Manufacturer:	Ningbo Water Meter (Group) Co., Ltd.					
Model number:	UL-DW					
Nominal diameter:	15	20	25	32	40	50
Type details:						
Q ₁ [m ³ /h]:	0.00625	0.01	0.01575	0.025	0.04	0.0625
Q ₂ [m ³ /h]:	0.01	0.016	0.0252	0.04	0.064	0.1
Q ₃ [m ³ /h]:	2.5	4	6.3	10	16	25
Q ₄ [m ³ /h]:	3.125	5	7.875	12.5	20	31.25
Q ₃ /Q ₁ :	400					



Q_2/Q_1 :	1.6					
Q_4/Q_3 :	1.25					
Measuring principle:	ultrasonic water meter					
Accuracy class:	2					
Maximum permissible error for the lower flowrate zone (MPEL):	±5 %					
Maximum permissible error for the upper flowrate zone (MPEu):	±2 %					
Temperature class:	T30, T50					
Water pressure class:	MAP16					
Pressure loss class:	Δp40					
Environmental class:	O					
Electromagnetic environment:	E1, E2					
Maximum admissible temperature [°C]:	30 or 50					
Maximum admissible pressure [MPa]:	1.6					
Orientation limitation:	any orientation					
Indicating range [m ³]:	99 999					
Resolution of the indicating device [m ³]:	0.001 (customer interface), 0.0000001 (metrology interface)					
Resolution of the device for rapid testing [m ³]:	-					
Installation details:						
Connection type (screw thread):	G ^{3/4} "B	G1"B	G1 ^{1/4} "B	G1 ^{1/2} "B	G2"B	G2 ^{1/2} "B
Min. straight length of inlet pipe [mm]:	0					
Min. straight length of outlet pipe [mm]:	0					
Flow conditioner (details if required):	no					
The installation sensitivity class:	U0 D0					
Length [mm]:	110 to 190	130 to 195	225 to 260	230 to 260	245 to 300	300 to 350
EUT testing requirements (OIML R 49-2:2013, 8.1.8):						
Category:	Ultrasonic water meter					
Case:	B					
Power supply:						
Type (battery, mains AC, mains DC):	battery					
U_{max} (V):	3.6					
U_{min} (V):	2.0					
Frequency:	DC					
Minimum battery life time [years]:	16					
Software:						
Software version (of legally relevant SW):	7.7.1					
CRC-32 checksum (of legally relevant SW):	2b2Ab5c7					
Information specified by the manufacturer (information in the table below is not certified):						
Communication interfaces:	RS-485, M-Bus, wireless M-Bus					

Securing components and verification marks

Access to parameters that influence the determination of the results of measurements is protected by a mechanical sealing device. The plastic clamp-on cover of the water meter and the water meter body are tightly interconnected by a wire and sealed by a plastic or metal seal such that the cover can't be removed without damaging the seal, the wire or some part of the water meter body or of the clamp-on cover.