



EU-TYPE EXAMINATION CERTIFICATE

Number: TCM 142/21 - 5854

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In accordance: with Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.).

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

For: Ultrasonic water meter
Type: UL-BW

Accuracy class: 2
Temperature class: T30 and T50

Valid until: 24 November 2031

Document No: 0511-CS-A039-21

Description: Essential characteristics, approved conditions and special conditions, if any, are described in this certificate.

Date of issue: 25 November 2021

Certificate approved by:




RNDr. Pavel Klenovský

1 Characteristics of instrument

The water meters type UL-BW are designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer in the sense of the Directive 2014/32/EU of the European Parliament and of the Council of the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (implemented in Czech Republic by Government Order No. 120/2016 Coll.), as amended.

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

The water meters type UL-BW consist of a cast iron body with connecting flanges, two pairs 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. Holding the button for 1 second switches between various items on the display. The display shows delivered volume for forward flow and instantaneous flow rate as a default. Touching the button once switches to delivered volume for reverse flow.

The checksum (CRC-32) of legally relevant software is shown on the display when the button is touched 4 times.

Version of the legally relevant software is shown on the display when the button is touched 5 times.

The water meters type UL-BW can be equipped by RS-485 and M-Bus communication interfaces which are not part of this certificate.

The water meters type UL-BW 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 positions.

2 Main characteristics

Basic technical data of water meters type UL-BW:

Nominal diameter:	50	65	80	100	125	150	200
Q_1 [m ³ /h]:	0.080	0.080	0.126	0.200	0.320	0.500	0.800
Q_2 [m ³ /h]:	0.128	0.128	0.2016	0.320	0.512	0.800	1.280
Q_3 [m ³ /h]:	40	40	63	100	160	250	400
Q_4 [m ³ /h]:	50	50	78.75	125	200	312.5	500
Q_3/Q_1 :	500						
Q_2/Q_1 :	1.6						
Q_4/Q_3 :	1.25						
Measuring principle:	ultrasonic						
Accuracy class:	2						
Maximum permissible error for the lower flowrate zone	±5%						
Maximum permissible error for the upper flowrate zone	± 2 % for water having a temperature ≤ 30 °C ± 3 % for water having a temperature > 30 °C						
Temperature class:	T30 or T50						
Water pressure class:	MAP16						
Pressure loss class:	Δp 10	Δp 10	Δp 10	Δp 16	Δp 16	Δp 16	Δp 16
Environmental class:	O						
Electromagnetic environment:	E2						
Indicating range [m ³]:	99 999 999 (customer interface), 999 (verification interface)						
Resolution of the indicating device [m ³]:	0.01 (customer interface), 0.00001 (verification interface)						
Resolution of the device for rapid testing [pulse/L]:	-						
Flow profile sensitivity classes:	U0D0						
Orientation:	Any						
Connection type (thread):	Flange connection						
Length [mm]:	200 to 310	200 to 250	225 to 413	250 to 483	250	300 to 430	350 to 520

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):	2.8
Frequency:	DC
Minimum battery life time [years]:	16
Software:	
Software version (of legally relevant SW):	7.1.9
CRC-32 checksum (of legally relevant SW):	7F419CF8
Other specifications of the software:	
Specific requirements for embedded software for built-for-purpose measuring instrument (type P)	
Extension I1: Water meters	
Information specified by the manufacturer (information in the table below is not certified):	
Communication interfaces:	RS-485, M-Bus

3 Tests

Technical tests of the water meters type UL-BW were performed in compliance with the International Recommendation OIML R 49 Edition 2013 (E) with conformity to EN ISO 4064:2017, Test Reports No. 6015-PT-P0045-21 and 8551-PT-E0029-20 and according to WELMEC 7.2, 2020, Test Report No. 6011-PT-SW002-21.

4 Conformity marks and inscriptions

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

- Water meter type
- Unit of measurement m^3 (on display)
- Numerical value Q_3 in m^3/h ($Q_3 \times .\times$) and the ratio Q_3/Q_1 ,
- EU-type examination certificate number
- Manufacturer's name, registered trade name or registered trade mark
- Post address of manufacturer
- 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 flow, by means of an arrow (on both sides of the body or on one side only provided the direction of flow arrow is easily visible under all circumstances)
- Maximum admissible pressure ($\text{MAP} \times \times$)
- The temperature class ($\text{T} \times \times$)
- The pressure loss class ($\Delta P \times \times$)
- The installation sensitivity class (Ux Dx)
- The latest date by which the meter shall be replaced
- Environmental classification (O)
- Electromagnetic environmental class (E2)
- Software version
- CE marking and metrology marking in line with the Directive 2014/32/EU

These markings shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use. Example is in Figure 3.

5 Additional specifications

The water meters type UL-BW shall be put onto the market in line with the procedure of conformity assessment according to the Annex D or F of the Directive 2014/32/EU as well as in compliance with the technical description of this report and shall be tested in accordance with the requirements determined in EN ISO 4064-1:2017, respectively OIML R 49-1:2013.

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure by the D or F Annexes of the Directive 2014/32/EU, respectively.

6 Ensuring the integrity of the instruments

Access to parameters that influence the determination of the results of measurements is protected by mechanical sealing devices. Some of the socket screws holding the covers of the indicating device and of the access to the ultrasonic transducers are sealed by a plastic plug such that the screws cannot be unscrewed without damaging the plug. At least one plug on the indicating device and one plug on each of the transducers' covers is marked by a safeguarding sticker.

Moreover, a wire connecting the cover of the indicating device with a screw of the cover of the access to the ultrasonic transducers is used and sealed by a plastic or lead seal such that the covers can't be removed without damaging the seal or the wire.

Location of the seals is described in Figures 1 and 2.

7 Drawings of the instrument

Water meters type UL-BW are manufactured according to the technical documentation of manufacturer. Technical documentation contains the following drawings:

Document reference	Date	Brief description
ZN1.637.284	07/2019	DN50, assembly drawings
ZN1.637.2118, 2119	12/2019	DN50, assembly drawings
ZN8.003.1530~1532	12/2019	DN50, body drawings with dimensions
ZN1.637.2128	07/2019	DN65, assembly drawings
ZN1.637.2129	12/2019	DN65, assembly drawings
ZN8.003.1533~1534	12/2019	DN65, body drawings with dimensions
ZN1.637.285	07/2019	DN80, assembly drawings
ZN1.637.2120, 2121, 2122	12/2019	DN80, assembly drawings
ZN8.003.1535~1538	12/2019	DN80, body drawings with dimensions
ZN1.637.286	07/2019	DN100, assembly drawings
ZN1.637.2184, 2185, 2186	12/2019	DN100, assembly drawings
ZN8.003.1539~1542	12/2019	DN100, body drawings with dimensions
ZN1.637.287	12/2019	DN125, assembly drawings
ZN1.637.332	07/2019	DN150, assembly drawings
ZN1.637.2187	12/2019	DN150, assembly drawings
ZN8.003.1544~1545	12/2019	DN150, body drawings with dimensions
ZN1.637.333	07/2019	DN200, assembly drawings
ZN1.637.2123	12/2019	DN200, assembly drawings
ZN8.003.1546~1547	12/2019	DN200, body drawings with dimensions
dial drawings		

Figure 1: The water meter type UL-BW – DN50, view and sealing:



Figure 2: The water meter type UL-BW – DN150, view and sealing:



Figure 3: The water meter type UL-BW – example of dial drawings:

