

VUSWM Ultrasonic Water Meter

DN15-DN40 Instructions



- Important tips**
- Before installing, please read this manual carefully. This manual is aimed at trained professionals; therefore, it does not include the basic installation steps. If there is any change in the product model and appearance, please refer to the actual product. This instruction applies equally to the case without affecting the function of the product. For details of the change, please contact VERAUT.
- This product is a precision measuring instrument , test strictly before leaving factory, please operate by professional personnel.
 - If the product is normal operation or need to be repaired, please contact VERAUT or our authorized dealers.
 - This product is a precision measuring instrument, please do not throw it down or hit it.

1 Product introduction

- 1.1 Product features**
- The low starting flow, minimum flow rate is lower than the 1/3 of the traditional water meter;
 - Bi-directional flow measurement;
 - The water temperature detection, temperature alarm;
 - No moving parts, no wear, can be long-term and stable operation;
 - Be installed at any angle, the measurement accuracy is not affected, No air measuring;
 - Ultrasonic signal quality detection;
 - Magnetic induction button;
 - The overall IP68 design, long-term immersion in the work;
 - To support M-Bus, RS485, infrared, wireless communication interface etc.;
 - Be compatible with EN 13757, OMS and the Modbus RTU communication protocol;
 - The water meter is required in accordance with drinking water standards;
 - LCD screen can be changed by touching the magnetic switch.

1.2 Technical parameters and characteristics

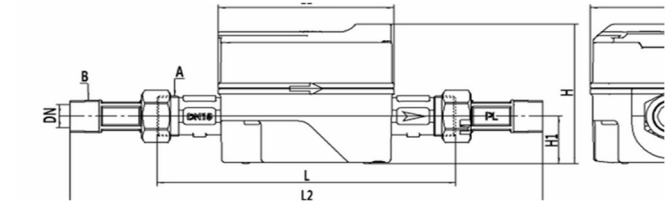
Precision Class	class 2
Standards	MID 2014/32/EU, OIML R 49:2013
Volume Display Options	1. Net (Forward less reverse) 2. Forward only 3. Forward & reverse alternating
Temperature grade	T30 / T50 (T70 optional)
Pressure loss grade	Δp 25 / Δp 40
Power Source	3.6 V Li-battery or additional power supply 24 VDC
Environmental Protection	IP68
Ambient operation temp	−25 °C to +55 °C
Maximum working pressure	1.6 MPa (MAP 16)
Range ratio (q _B : q _I)	250:1, 400:1, 500:1, 800:1 (R 250 / R 400 / R 500 / R 800) selectable
Data Logger	Volumes: 720 Daily data;36 Monthly data;16 Yearly data Alarms data: 32
Maximum flow reading (m³)	Forward: 99999.99999; reverse:-9999.99999
Electromagnetic environment level	Class E1 / E2; mechanical class M1
* remark	Battery life over 13 years in normal ambient temperature conditions, also depends on the data transmission frequency and correct meter battery installation (positive electrode on the top)

Standard interface	Infra-red, M-Bus, RS485
Optical interface	EN 1434-3 / EN 61107, bidirectional, optical read-out head, 2400 baud
Wireless interface	wireless M-Bus: 868 MHz, EN 13757 / OMS
	LoRaWAN: EU868
	NB-IoT: 3GPP Cat-NB2 (standard version)
	Cellular: GPRS, LTE Cat-1, 4G
Digital (pulse) Output	OC: Volume

Nominal diameter DN(mm)	15	20	25	32	40
Maximum flow Q ₄ (m³/h)	3.125	5	7.875	12.5	20
Common flow Q ₃ (m³/h)	2.5	4.0	6.3	10.0	16.0
Boundary flux Q ₂ (m³/h)	0.005	0.008	0.0126	0.02	0.032
Minimum flow Q ₁ (m³/h)	0.00313	0.005	0.00788	0.0125	0.02
Pressure loss grade Δp	25 / 40	25 / 40	25 / 40	25 / 40	25 / 40

Nominal diameter	15	20	25	32	40
L(mm)	165/110 ★	190/130/195 ★	160/225/260 ★	180/230/260 ★	200/245/300 ★
L1(mm)	97	97	97	97	97
L2(mm)	259/204	294/234/299	280/345/380	300/350/380	328/373/428
H(mm)	91	91	91	128	139
H1(mm)	31	28	25	29	36
W(mm)	90	90	90	90	90
Meter screw thread A (inch)	G¾B	G1B	G1¼B	G1½B	G2B
Threaded for union B (inch)	R½	R¾	R1	R1¼	R1½

Note: ★ for the default length; Q₁ and Q₂ at R 800



2 LCD

- 2.1 Liquid crystal display interface**
- There are two modes of display mode: One is the standard menu display mode; the other is a high precision menu display mode.
 - switch between standard menu mode and high-precision menu mode by using the factory's meter reading software.
 - Standard menu display is divided into single-screen menu display and ordinary menu display.
 - With the magnetic switch can switch the same menu of the display items.
 - Magnetic switch to use: with a magnetic pen touch the product LCD screen  icon position.

Standard menu - single screen display

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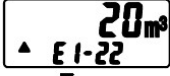
Volume in the direction of flow (default display)
- 

Instantaneous flow
- 

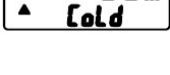
Water temperature (In °C)

If the meter fails, the decimal part of the cumulative volume shows an alarm symbol. If several faults occur, the symbols are displayed one after another.

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Empty pipe
- 

Transducer alarm
- 

Channel (1, 2, 3, 4)
- 

Water temperature below 4 °C

Standard menu - normal display

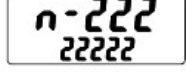
High precision menu

- 

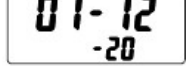
Positive volume flow (default display)
- 

Negative volume flow
- 

Water temperature (top)
Instantaneous flow (bottom)
- 

Primary address (top)
Battery voltage (bottom)
- 

Secondary address
- 

Month - day (top)
Year (bottom)
- 

Hour - minute (top)
Second (bottom)
- 

Operating hours (top)
Alarm hours (bottom)
- 

Software version (top)
Flow correction (bottom)
- 

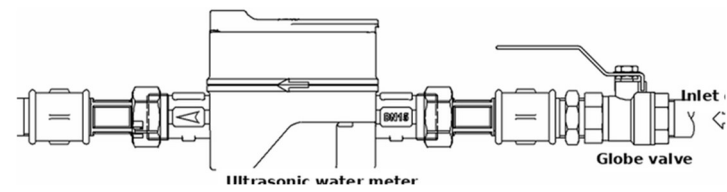
Transit time difference
- 

Size parameter (top)
Signal strength (bottom)
- 

Display test

3 Guide for typical installation and maintenance

3.1 Schematic diagram of typical installation



3.2 Installation notes

For safety reasons, please read the following points carefully:

- When install water meter in horizontal position, do not install in the highest position, avoid bubble gathers.

The meter is assigned to flow profile sensitivity class U0 / D0.

No straight inlet or outlet sections are required upstream or downstream of the meter, in horizontal or vertical position.

- When install water meter in vertical position, water should flow from bottom to up.

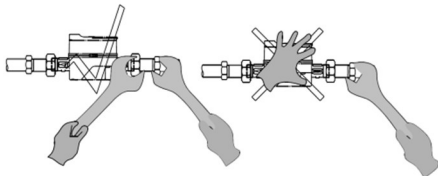
The direction of flow is marked by an arrow on the meter body and must be observed.

The measuring tube must remain completely filled during operation.

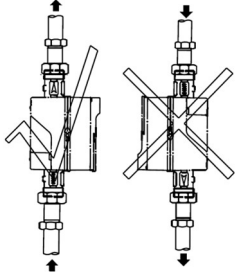
- The device is designed for use under the specified specifications. Improper use involves risk and the possibility of damage. Failure to comply with the specified parameters will void the warranty.
- For installations in rooms with flammable and / or explosive substances, the applicable protective measures must be followed.
- Since sharp edges signify a risk of injury, work gloves must be worn.
- Do not install the device in places where it is exposed to toxic, irritating or corrosive gases as well as liquids and dust.
- Make sure that the device is not installed in hazardous locations.
- Installation and removal of the device may be performed only by qualified personnel.
- Installation and removal of the device may only be carried out without pressure
- The required lightning protection measures must be taken into account.
- The bus must adopt multi strand shielded twisted pair wire, diameter is not less than 0.75 mm².
- It is prohibited to install signal lines and power lines in the same slot, in order to avoid signal interference.

3.3 Several common error installation methods

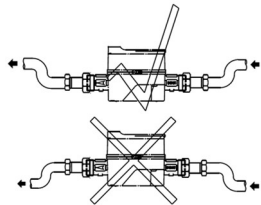
- When installation, please screw the pipe nut with a wrench. Do not use hand holding the plastic box body of calculator and then use the wrench to tighten the nut, because it may cause damage.



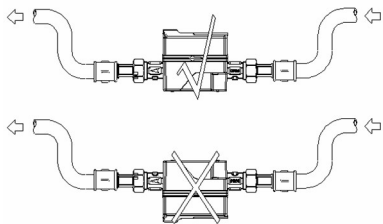
- At a vertical installation scenario the water meter needs to be installed on the flow upward straight pipe. It will affect the measurement accuracy, even lead to immeasurability, if installed on the flow downward pipeline. Because the water cannot fill the pipe completely.



- Please install the water meter in the lowest position while installed in the "U" type. Because it is likely to gather the air in the pipe at the highest point, causing immeasurability or inaccurate measurement.

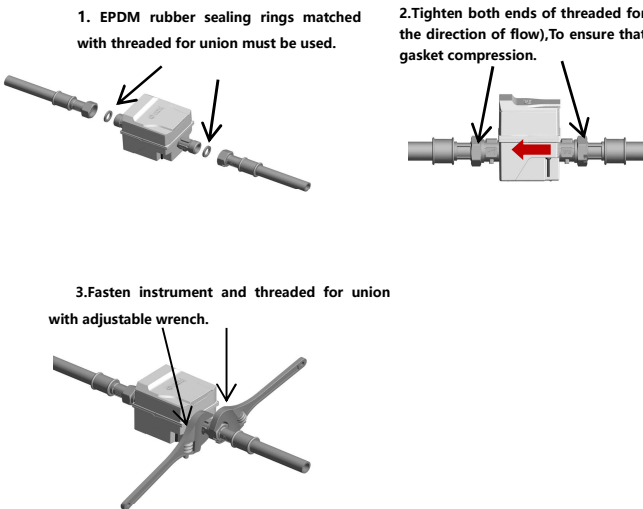


- When the water meter is horizontally installed, Because LCD face down installation will affect the battery life.



3.4 Installation steps

- To cut off the installation instrument place of water supply pipe, Set aside installation position of meter and threaded for union.
- Keep the threaded for union screwed to the water supply pipe opening.
- Align the instrument with the connection accessories; use Matching seal ring between instrument and threaded for union, As shown in figure:



4 Descriptions of the state of hazardous substances content in products

Component name	Toxic or hazardous substances or elements				
	Lead Pb	Mercury Hg	Cadmium Cd	Six valence chromium Cr (VI)	Multi bromine PBB
complete machine	×	○	○	○	○
Component name	Two phenyl ether PBDEs	Diisobutyl phthalate DIBP	Phthalate DEHP	Dibutyl phthalate DBP	Benzyl phthalate BBP
complete machine	○	○	○	○	○
○: It indicates that the content of the toxic and hazardous substances in all homogeneous materials of this part shall not exceed the limits set by the DIRECTIVE 2011/65/EU standard. ×: It indicates that the content of the toxic and hazardous substances in a homogeneous material in at least one part of the component exceeds the requirements specified in the DIRECTIVE 2011/65/EU standard. Note: 1. This table shows that our products don't contain these substances. 2.The explanatory power of part definition in this table belongs to our company. 3. According to EU Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product must not be discarded with other household waste at the end of its service life. If you need to scrap the product, you can return it to VERAUT; VERAUT will carry out the proper disposal or return the product to recycling. 					

5 Warranty commitment

- (1) Free warranty: If the product broke down or didn’ t work normally, we are in charge of the gratis repair or replacement in the premise of intact seal, from the date of your purchase (the formal purchase invoice date). But we won’ t undertake related charges of the door to door service.
 - (2) Exempt from warranty obligations: in order to protect your legitimate rights and interests, and avoid unnecessary losses, please notice that our company does not assume warranty obligations to the failure, abnormal operation or damage caused by the following conditions. It needs to pay maintenance cost.
 - a. When the product is beyond the warranty period.
 - b. Product damage due to the error use, self dismounting, improper maintenance and other reasons.
 - c. Open the product seal privately.
 - d. Accident factors (transport, collision, etc.) or man-made damage.
 - e. Other damage caused by force majeure such as natural disasters (earthquake, fire etc.) and so on.
 - (3) After sales service: if the product goes wrong when normal use, please contact the supplier or the sales department, in order to provide you with immediate services.
 - (4) About battery: See panel for battery life, it is recommended to purchase and replace it before the expiration, in order to avoid inaccurate measurement due to battery under voltage.
- Important statement: We have tried our best to guarantee the product data reliability in design, but we can’ t guarantee that there is no problem in all products. We will try to recover the loss data for the customers, which caused by the product breakdown and other reasons. But we won’ t undertake the losses caused by the measurement data loss. Please read and save measurement data regularly.

Packing list

Name	Model	Number	Remarks
Ultrasonic water meter		1	*
Instructions		1	

*Expressed as the main component.