User Manual

B.One Smart Water Meter

(Ultrasonic)

Index

Product Structure

1. Overview

The prepaid ultrasonic water meter adopts a meter-valve integrated design, combining metering and control valves in a compact structure. The prepayment mode is flexible and can be configured as needed into the following two prepayment forms: local card prepayment and system platform remote prepayment, which greatly facilitates the management department to count and manage user water use behavior. The water meter has a built-in IoT module and supports IoT applications. It can upload water consumption and status information to the IoT platform at regular intervals.

The product complies with the standard "GB/T 778-2018 Drinking Cold Water Meter and Hot Water Meter for Measurement of Water Flow in Closed Full Pipes" and the verification procedure "JJG 162-2019 Drinking Cold Water Meter".

2. Product Features

1. The meter and valve are integrated, the structure is fully wrapped, and it is anti-destructive.
2. With self-diagnosis function: Flow sensor fault alarm, temperature sensor fault alarm, measurement over-range alarm, battery undervoltage alarm, valve fault alarm
3. The company's patented flow measurement method (invention patent has been authorized) and intelligent data error correction technology are applied, with high measurement accuracy and stability.
4. The combination of lithium battery and SPC can meet the current demand when the valve is in motion.
5. Equipped with photoelectric interface, supports on-site reading of handheld infrared meter reading tools.
6. Built-in NB-IoT communication module to support IoT applications.
7. Optional wired (M-BUS or 485) or wireless (LoraWan) communication interface.
8. Support local IC card pre-charge or system platform remote recharge.
9. Supporting card pre-charge management software or remote prepaid management system platform.
10. Support forward and reverse bidirectional measurement.

3. Technical Specification

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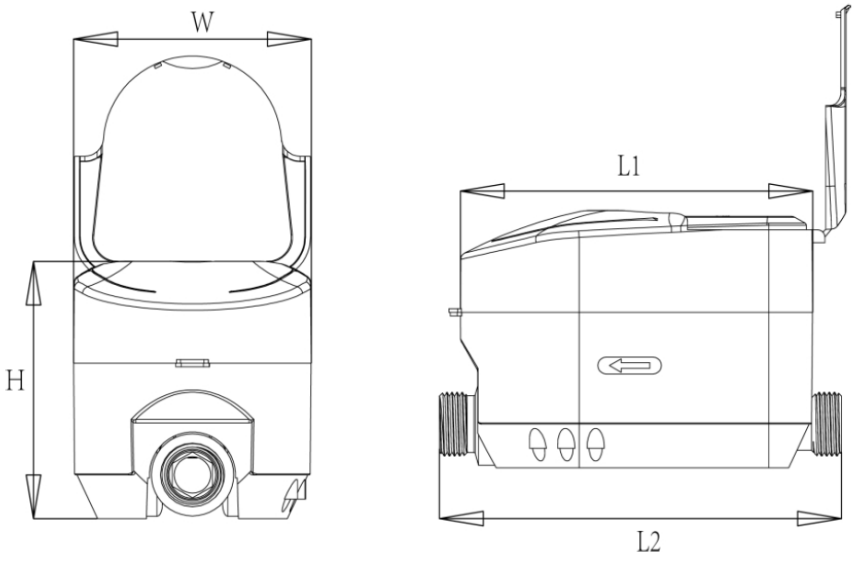
Cumulative Volume Resolution	0.0001m^{Com}_{bin} (User Mode) 0.001L(Test mode)
Current Flow Resolution	0.001m3/h (user mode) 0.001m3/h (Test mode)
Battery life	> (6+1) years
LCD display digits	9-digit
Temperature Grade	T30, T50, T70, T90
Pressure Level	MAP16
Pressure loss level	△p25
Pressure loss level	△p25
Environmental level	O-level
Protection level	IP68
Level of Accuracy	Level 2
Electromagnetic Environment Level	E1, E2
Installation	Horizontal or vertical
Upstream/Downstream Flow Field Sensitivity Level	U5/D3
Range ratioQ3/Q1	125, 160, 200, 250, 400, 500
Caliber range	DN15～DN25
Common traffic Q3	DN15: 2.5 m3/h DN20: 4.0 m3/h DN25: 6.3 m3/h

Parts name	Model Specs	Technical Parameters	Remark
Measurement Module	HM1058	/	/
Flow Sensors	TD0001	Center frequency: 1MHz	
Flow Pipe Section	DN15~DN25	copper	/
Battery	ER26500+SP C1520	3.6V 9000mAh	/

4. Installation

4.1 Installation Dimensions



Nominal Diameter DN (mm)		15	20	25
Size	Shell length L1 (mm)	142	148	148
	Overall Length L2 (mm)	165	195	225
	Width W(mm)	96	96	96
	Height H(mm)	106	108	110
	Weight(kg)	1.03	1.11	1.39

Nominal Diameter DN (mm)		15	20	25
Flow Pipe Interface Size	Thread Specification	G 3/4B	G1B	G1 1/4B
	Thread Length(mm)	12	12	12
Pipe Fitting Size	Pipe JointLength (mm)	43	50	58
	Thread Specification	R1/2	R3/4	R1
	Thread Length(mm)	15	16	18

4.2 Installation requirements of Ultrasonic Water Meter

Special Reminder:

For installed Ultrasonic Water Meters, during winter, when water may freeze, please ensure at least one valve is opened (either the valve in front of the water meter, the water inlet valve, or a faucet in the user's room). This prevents the ultrasonic sensor from being damaged due to the freezing of the pipe. This precaution is especially important when the property is unoccupied or there is no water usage.

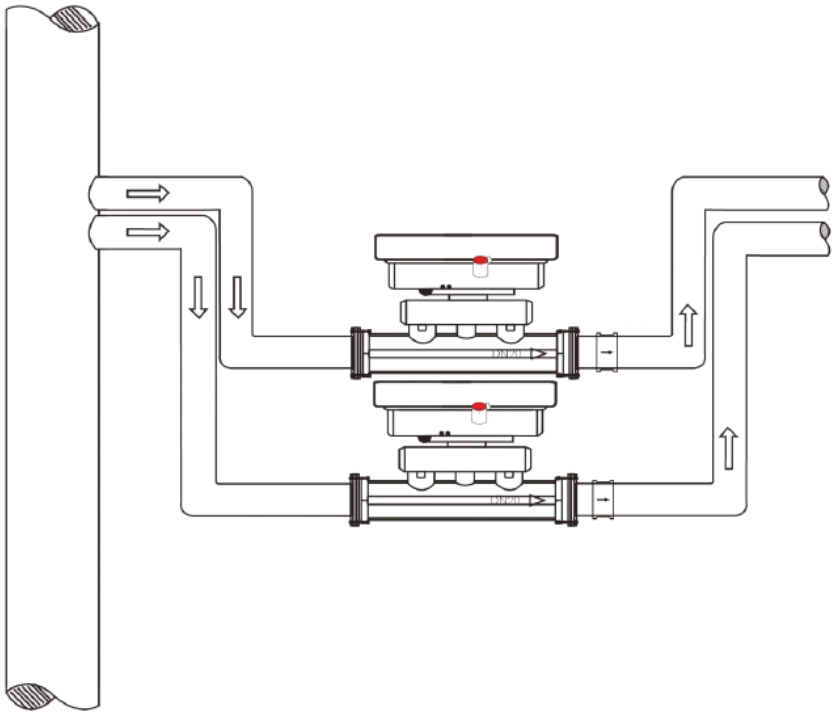
Due to the different measurement principles of Ultrasonic Water Meters compared to mechanical water meters, the pipes must not be empty or contain a large number of bubbles. Otherwise, the ultrasonic signal will not transmit properly, causing the meter to either fail to count or measure inaccurately.

Additionally, to prevent water remaining in the measuring pipe section from fluctuating back and forth due to changes in water pressure in the pipeline—which may affect the normal operation of the meter—it is strongly recommended to install a check valve at the outlet of the Ultrasonic Water Meter.

Our company offers pipe fittings with integrated check valves at the outlet, which can be used in conjunction with the product for optimal performance.

Recommended Installation Method:
(Provide details or diagrams for the installation method as needed.)

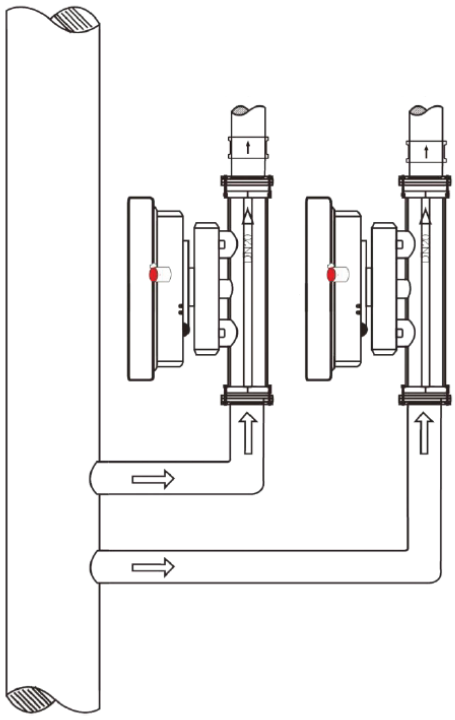
Horizontal Installation



Note:

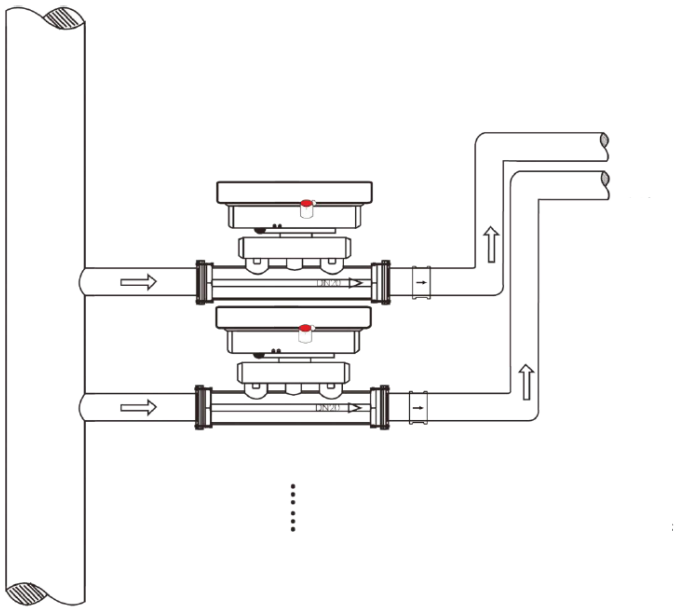
When installing horizontally, it is recommended to install the pipe in a "U" shape. In this case, the Ultrasonic Water Meter pipe section at the lower position can be kept full.

Vertical Installation



Compromise installation method (horizontal)

If it is challenging to implement the recommended horizontal installation due to on-site constraints, please ensure it is installed at least as shown in the figure below.



In the figure, the pipe section in front of the water meter can be parallel to the water meter body (compared to the recommended method, the right-angle bend structure is eliminated). However, the pipeline at the rear end of the water meter must be arranged as shown in the figure to prevent bubbles from accumulating in the pipeline.

5. Precautions Before Installation

1. **Clean the Pipes Before Installation:**
   Before installing an Ultrasonic Water Meter, the pipes must be thoroughly cleaned to prevent debris from damaging the water meter.

2. **Handle with Care:**
   Ultrasonic Water Meters are expensive and precise instruments. Handle them carefully when lifting or placing them. Avoid directly pulling the meter head or sensor line. Keep the meter away from high-temperature heat sources (such as electric welding) to prevent battery explosions, injuries, or damage to the meter.

3. **Select the Installation Location Carefully:**
   Pay special attention to the installation location of Ultrasonic Water Meters. They should not be installed:
   - At the upper end of a pipe (to avoid bubble accumulation in the pipe section).
   - Near an elbow (to prevent vortex flow).
   - Close to pumps or other equipment (to avoid pulsating flow).

4. **Ensure Consistent Pipe Diameter:**
   The connecting pipes upstream and downstream of the Ultrasonic Water Meter must be consistent with the diameter of the water meter and must not be reduced.

5. **Follow the Flow Direction:**
   The direction indicated by the arrow on the Ultrasonic Water Meter must match the water flow direction. Do not install the meter in reverse.

6. **Install Supporting Components:**
   It is recommended to install:
   - A filter of the corresponding caliber in front of the Ultrasonic Water Meter.
   - Valves of the corresponding caliber before and after the meter.
     These valves should allow the meter body to be isolated to facilitate future maintenance and repair.

Common Examples of Incorrect Installation

When the meter is installed vertically, it must be placed on a straight pipe with water flowing upwards. This is because a pipe with water flowing downwards may not remain filled with water due to gravity, leading to inaccurate measurements or even a complete failure to measure (as shown in Figure C).

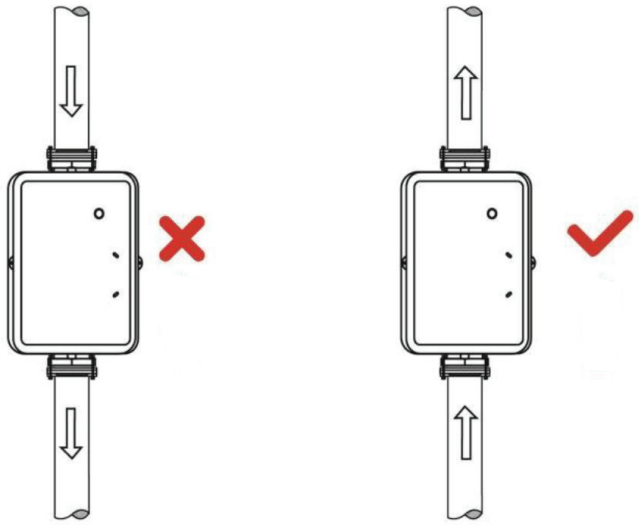


Fig: C

When installing in a "U"-shaped pipe, please install the meter at the lowest point, because air may gather at high places in the pipe, causing the meter to measure inaccurately or not at all (as shown in Figure D).

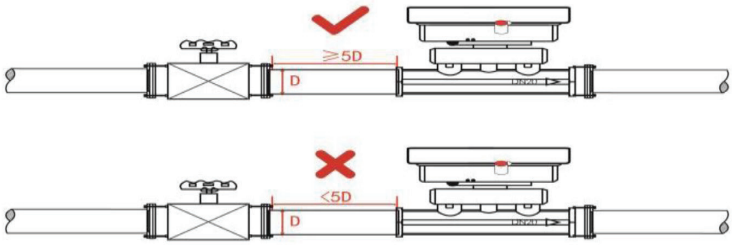


Fig: D

When the meter is installed at a bend, it is essential to ensure that the straight pipe section before the meter is at least five times the pipe diameter (≥5D) and the straight pipe section after the meter is at least three times the pipe diameter (≥3D). Failing to meet these requirements may result in inaccurate measurements (as shown in Figure E).

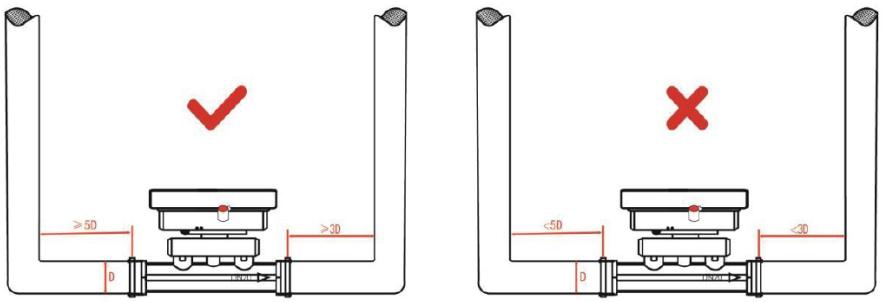


Fig: E

When installing a valve or other object in front of the meter, it is necessary to ensure that there is a distance of ≥5 times the diameter between the meter and the object, otherwise the meter may not measure accurately; (as shown in Figure F)

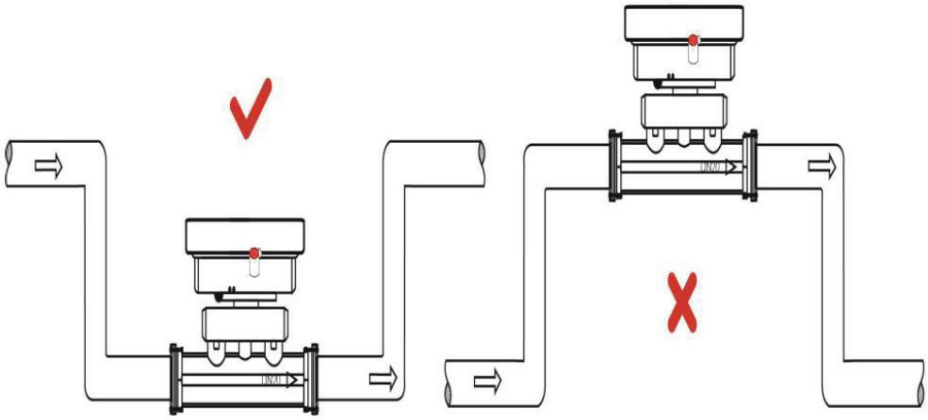


Fig: F

6. Wiring

Power Cord:

Powered by built-in lithium battery, no additional power cord required External power supply mode (optional), red wire connected to the positive pole of the power supply, black wire connected to the negative pole of the power supply, voltage range DC (7.5～24) V;

Communication line:

M-BUS Communication Mode:

Directly connect the two communication lines to the M-BUS bus, without distinguishing between the positive and negative poles.

485 Communication Mode:

There are four wires on the meter:

- A (yellow)
- B (green)
- Ground (black)
- Power (red, DC 7.5–24V)

Connect the wires accordingly, paying close attention to the polarity. Incorrect connections may cause the meter to burn out.

6.1 Daily Maintenance

1. The current status of the Ultrasonic Water Meter must be checked before use.
2. The lead seal on the Ultrasonic Water Meter must not be damaged. If it is damaged, the manufacturer will no longer be responsible for the quality or accuracy guarantee.

1. The Ultrasonic Water Meter is powered by a built-in lithium battery, with a running time of up to 6 years. If a symbol indicating insufficient voltage appears, notify the after-sales personnel promptly to avoid affecting normal operation.

7. Common Fault Analysis and Troubleshooting

Note:

Only if a fault occurs, should you check the fault menu ([E]) to further confirm the source of the issue.

S. no	Error Type	Symbol	Wrong Reason	Approach
1	Battery failure	Always ON	The battery is under voltage or the connection is bad.	Check the connection plug and replace the battery
1	Air traffic control failure	Always ON	There is no water in the pipe section or the water does not fill the pipe section	The pipe section is filled with water and the air bubbles are removed.
1	Reverse flow fault	Always ON	The water inlet and outlet of the pipe section are connected in reverse	Replace the inlet and outlet ends of the pipe section
1	Over range	Always on	The current instantaneous flow is too high	Reduce the flow rate or change the meter to a corsponding range.
1	Water temperature failure	Always on	Water temperature failure	Lower the water temperature or replace the meter with a corresponding specification
1	EE Failure	Always on	EE memory failure	Replacement of circuit boards
1	sensor	Always on	Water inlet sensor failure	Replace or reinstall the water inlet sensor
1	sensor	Always on	Water outlet sensor failure	Replace or reinstall the water inlet sensor
1	Valve closed	Always on	The built-in ball valve is closed	Valve status prompt, not error prompt

8. Packing List

S. no	Name	Unit	Quantity
1	Prepayment Ultrasonic Water Meter	Only	1
2	Pipe joint (including connecting nut and sealing washer) (optional)	Set	1
3	Product Manual	Share	1
4	Product Certification	Share	1

9. Transportation and Storage

1. The instrument must be handled with care during transportation to avoid severe impact.
2. Storage environment temperature (-10 ~ 50) , relative humidity less than 80%, avoid strong electromagnetic fields and direct sunlight.
3. The stored products should be at least 30cm from the ground, at least 1m away from the four walls, and no less than 2m away from heating equipment.
4. The warehouse should be kept dry and free of corrosive substances, gases and dangerous goods.

Note:

It is recommended that you read this information carefully before using the product.

We hope you will contact us frequently to obtain the latest information, as our products are constantly being updated and improved.