User Manual

GUANGZHOU BASIC INTELLIGENCE TECHNOLOGY CO.,LTD

Contents

Overview

Ultrasonic water meter is a new type of water meter for flow measurement and display based on the principle of ultrasonic time difference. The meter is equipped with an M-BUS interface by default, which can form a remote meter reading management system through the M-BUS bus and other communication equipment. The management department can read the data in the meter at any time, which is convenient for the statistics and management of user water.

The product implements the standards of "GB / T 778 Measurement of Water Flow in Closed Full Pipes, Drinking Cold Water Meters and Hot Water Meters" and the "JJG 162-2009 Cold Water Water Meter" verification procedures.

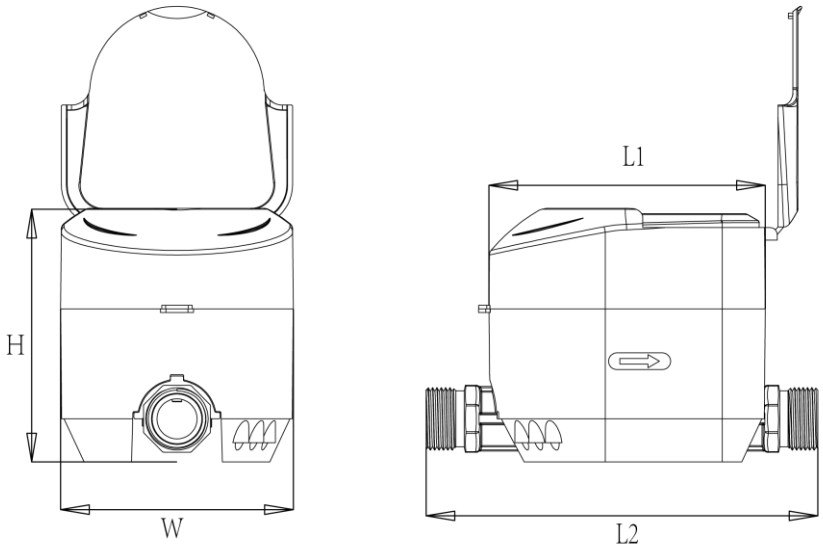
Features

1. All plastic watch body with compact mechanism
2. High range ratio (maximum 800: 1)
3. Self-diagnostic function: flow sensor fault alarm, temperature sensor fault alarm, measurement over range alarm, battery low voltage alarm.
4. Built-in lithium battery power supply can ensure more than (6 + 1) years of use
5.With photoelectric interface, support hand-held infrared meter reading tool on-site reading
6. Bidirectional measurement (forward and reverse measurement)

Technical Parameters

Accumulated Flow Resolution	0.001m^3 （Daily） 0.00001m^3 （Inspection）
Instantaneous Rate Resolution	0.001 m^3/h（Daily） 0.001 m^3/h （Inspection）
Battery Life	（ 6+1）years
LCD Digits	8
Temperature Class	T50、T90
Pressure Class	MAP16
Pressure Loss Class	△p40
Ambient Class	Class O
Waterproof Class	IP65/IP68
Accuracy Class	2
EMC Class	E1
Installation	Horizontal or Vertical
Flow Section Sensitivity Class	U5/D3
Reverse Flow	Reverse Flow Measurable
Diameter Range	DN15～DN40
Dynamic Range Q_3/Q_1	R250

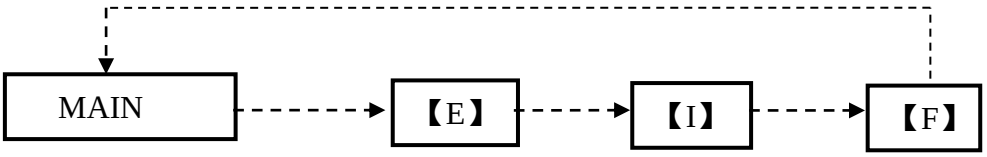
Dimension & Flow range



Diameter		DN15	DN20	DN25	DN32	DN40
Meter	Length L2(mm)	165	195	225	180	200
	Length L1(mm)	114	114	114	114	114
	Wide W(mm)	96	96	96	96	96
	Hight H(mm)	106	106	110	135	137
	Weight (kg)	0.81	0.92	1.26	1.34	1.65
	Meter Thread	G 3/4B	G1B	G1 1/4B	G1 1/2B	G2B
	Thread Length(mm)	12	12	12	13	14
Fitting	Fitting Length(mm)	43	50	58	58	59
	Fitting Thread	R1/2	R3/4	R1	R1 1/4	R1 1/2
	Thread Length(mm)	15	16	18	20	22
Nominal flow rate Q3(m^3/h)		2.5	4	6.3	10	16
Transition flow rate Q2(m^3/h)		0.016	0.0256	0.0403	0.064	0.1024
Minimum flow rate Q1(m^3/h)		0.01	0.016	0.0252	0.04	0.064

Operation

The meter uses the menu operation mode to display the working status and measurement parameters on the LCD. You can use the matching magnetic bar to touch the magnetic induction area on the panel to switch the display content. Operation and display consists of 4 menus.



■ **Arrows**

- - - - → Indicates that the magnetic sensor is in contact with the sensing area for more than 2 seconds (equivalent to long press, hereinafter referred to as "long press")

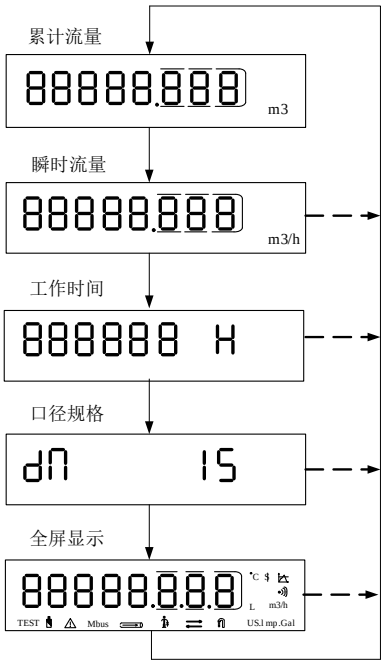
——→ Indicates that the magnetic field is used to touch the sensing area for about 1 second (equivalent to short press, hereinafter referred to as "short press")

Inside the boxes are

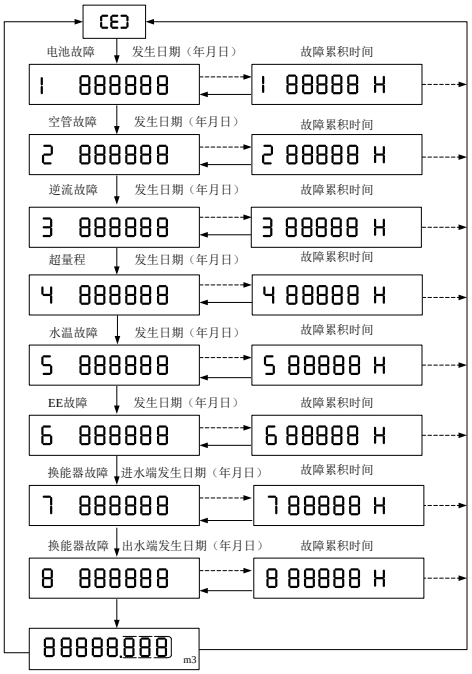
1) The main menu is the status during normal use
2) Fault menu [E]
3) Information menu [I]
4) Detection menu [F]

The display is always on in the main menu during standby mode, and the main menu is displayed as accumulated flow. As shown in the figure above, the "long press" operation can switch the menu directory, find the menu you want to view, and then follow the operation diagram of each menu to view related content. If no operation is performed for more than 3 minutes, the display will automatically return to the main menu page (except the items under the detection menu [F]).
It should be noted that no matter what menu display state, as long as the water meter is in use, the flow will be accumulated in the relevant items of the main menu, and the measurement data will not be missed or undercounted due to key operation.

1.Main Menu

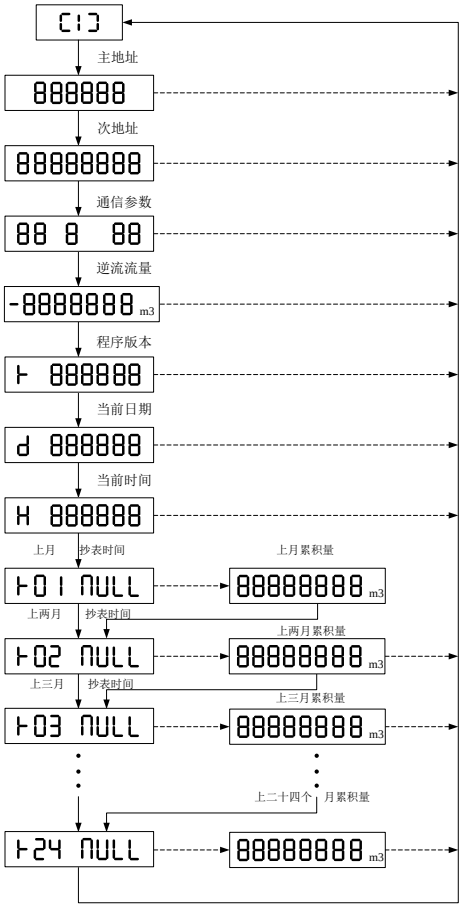


2.Fault Menu【E】

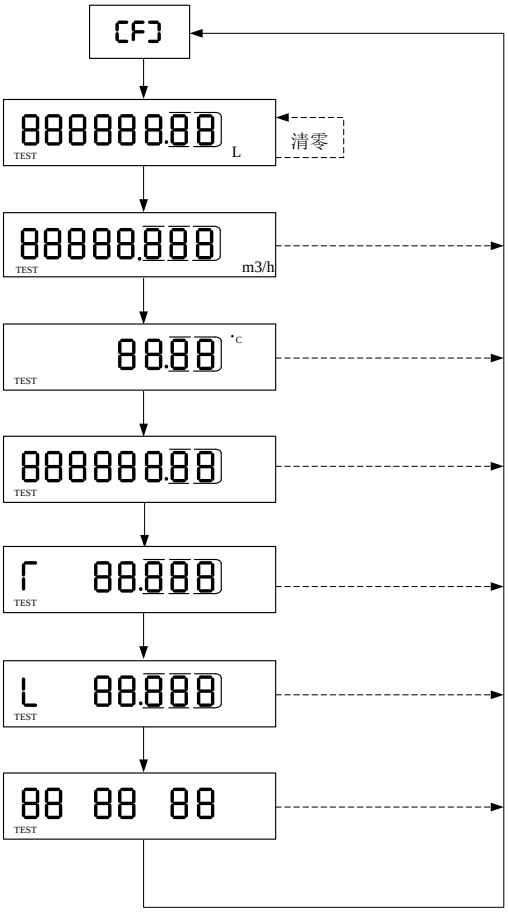


SHORT PRESS LONG PRESS

Information Menu【I】



4. Detection menu [F]



Note: Under the test menu, the cumulative flow interface has an auto-zero function. When the flow rate is 0, if the flow rate in the pipe section is detected to be greater than the set value, the current accumulated value is cleared, which is convenient for manual detection. If it cannot be reset automatically, you can manually reset it by long-pressing; if there is no operation for 2 hours in the verification mode, it will automatically exit the verification mode.

Infrared Reading

Users can be equipped with a handheld device to realize handheld meter reading, which is used to record the accumulated flow and operating time of the water meter. The meter reading method is as follows:

Press the standby interface briefly, point the handheld meter to the infrared receiving and sending interface of the water meter, and select the meter reading command. After the communication is successful, the handheld will display related information. For details, refer to the infrared handheld meter reading manual.

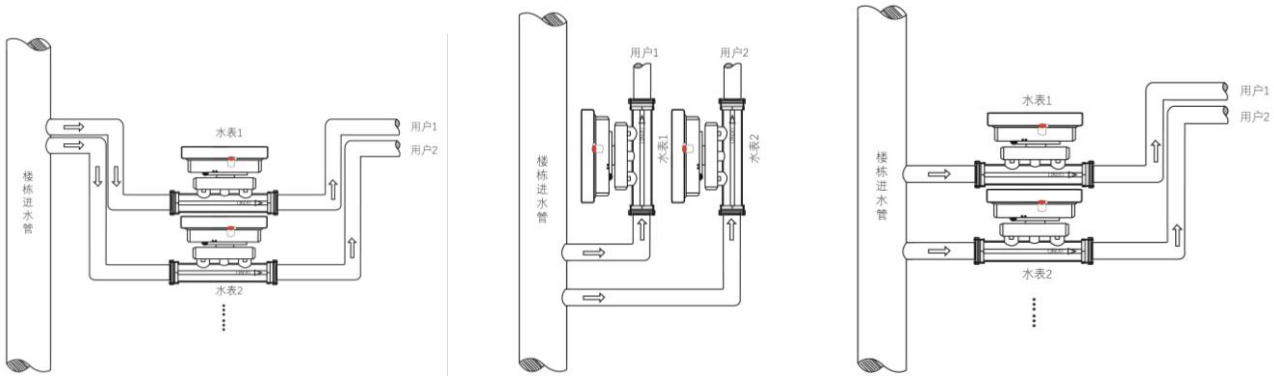
Installation

1. Installation requirements for ultrasonic water meters

★ Special reminder: under the condition that the ultrasonic water meter has been installed, in order to prevent the pipeline from being frozen and cracked, the ultrasonic sensor may be damaged. Valves, faucets). This is especially important when there is no one living or using water.

Ultrasonic water meters have different measuring principles than mechanical water meters. The pipe cannot be empty or accumulate a lot of air bubbles. Otherwise, the ultrasonic signal cannot be transmitted, which causes the water meter to fail to count or measure accurately.

Based on the above reasons, the recommended installation methods are as follows:



Horizontal installation

For horizontal installation, it is recommended to install as follows, and make the pipeline "U". In this case, the ultrasonic water meter pipe section at a low position can keep the full pipe.

Vertical installation

When installed vertically, as shown in the figure above, the direction of the water flow is to enter the water at the lower end of the water meter and the upper end to exit the water. In this case, when water flows through, bubbles can be prevented from accumulating in the water meter measuring pipeline.

Compromised installation (horizontal)

If it is really difficult to implement the recommended horizontal installation conditions due to the on-site objective conditions, install at least as shown in the figure below.

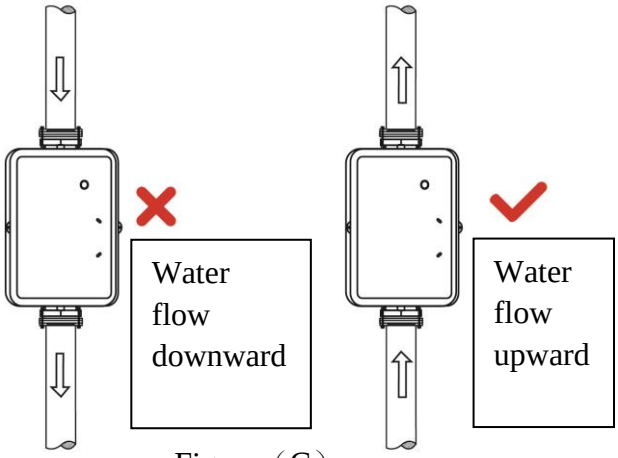
In the figure, the pipe section in front of the water meter can be parallel to the body of the water meter (compared to the recommended method, the structure bent at right angles is eliminated), but the pipeline at the back of the water meter must be laid out as shown in the figure to avoid the accumulation of bubbles in the pipe.

2. Precautions before installation

(1) Before installing the ultrasonic water meter, the pipes must be cleaned thoroughly to avoid debris from damaging the water meter;
(2) Ultrasonic water meters are relatively expensive precision instruments. Be careful when picking up and lowering. Do not directly pull the meter head or the sensor wire; do not approach high temperature heat sources (such as electric welding to prevent battery explosion from hurting people and damaging the meter);
(3) Special attention should be paid to the installation position of the ultrasonic water meter. Avoid installing the water meter on the upper end of the pipe (there will be air bubbles in the pipe section), avoid installing it near the elbow (which will generate vortex), and keep it away from pumps and other equipment (which will cause Pulsating flow);
(4) The connecting pipes at the upstream and downstream of the ultrasonic water meter should be the same as the diameter of the water meter and cannot be reduced;
(5) The direction of the arrow on the surface of the ultrasonic water meter is the direction of the water flow, and it must not be reversed;
(6) It is recommended that the front end of the ultrasonic water meter be equipped with a filter of the corresponding caliber; a valve of the corresponding caliber is installed in front of the meter and it can be separated from the body of the meter to facilitate future maintenance and repair.

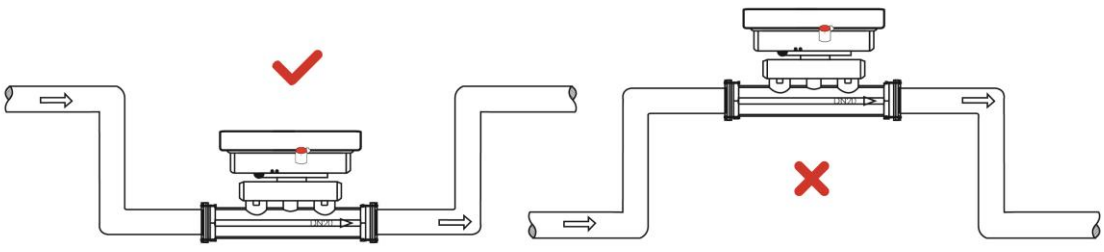
3.Examples of common incorrect installations

1) When the meter is installed vertically, it must be installed on a straight pipe with the water flowing upwards, because the pipe with the water flowing downwards will be unable to be filled with water in the pipe under the gravity's gravity. At this time, the meter will not be filled. Even cause non-measurement (as shown in Figure C).



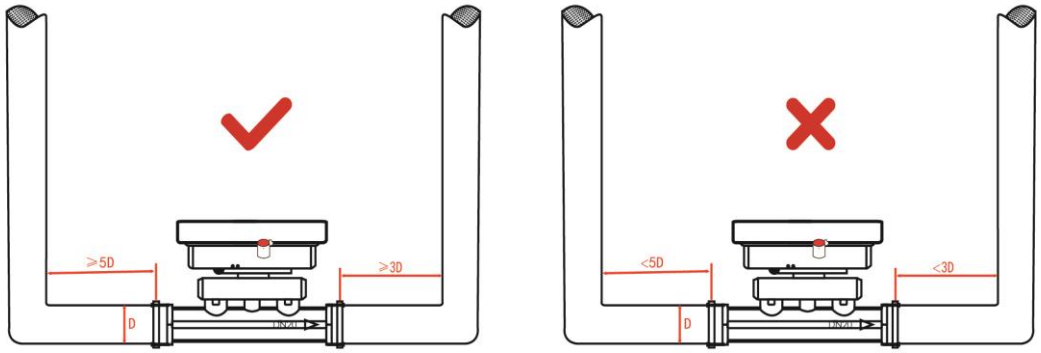
Figure（C）

3) When installing at the "U" -shaped pipe, please install the meter at the lowest position, because the pipe may collect air at a high place, causing the meter to be inaccurately measured or not (as shown in Figure D).



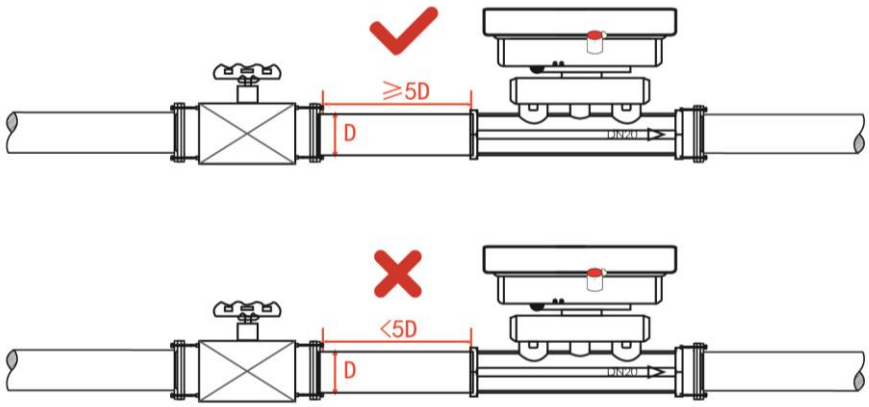
Figure（D）

4) When the meter is installed at a bend, the distance between the front straight pipe and the straight pipe must be ≥ 5 times and the rear straight pipe must be ≥ 3 times the pipe diameter. Otherwise, the meter may be inaccurate (as shown in Figure E).



Figure（E）

4) When installing a valve or other objects in front of the meter, you must ensure that there is a distance of ≥ 5 times the diameter between the meter and this object, otherwise the meter may be inaccurately measured; (as shown in Figure F)`



图（F）

4.Wiring

● Power cord

Powered by built-in lithium battery by default, no additional power cord required

External power supply mode (optional), the red lead is connected to the positive pole of the power supply, the black is connected to the negative pole of the power supply, and the voltage range is DC (7.5 ～ 24) V;

● Communication line (only applicable to wired interface)

M-BUS communication mode: directly connect two communication lines to the MBUS bus, without the need to distinguish between positive and negative poles;

RS485 communication mode: There are 4 wires on the table: A (yellow), B (green), ground (black), power (red, DC 7.5 ～ 24V), corresponding connection (note the polarity, wrong connection) May burn);

5.Daily Maintenance

(1) The current state of the ultrasonic water meter must be checked before use;

(2) The lead seal on the ultrasonic water meter cannot be damaged. If the manufacturer is damaged, the quality and accuracy guarantee will no longer be guaranteed;

(3) The ultrasonic water meter is powered by a built-in lithium battery and can run for up to 6 years. When the battery life is near or less than 6 years but the data displayed on the LCD screen is not clear or the battery symbol is displayed (indicating that the voltage is insufficient), the battery should be replaced by a specialized technician to avoid affecting its normal work;

6. Analysis and troubleshooting of common faults

No.	Error Type	Error cause	Solution
1	Battery	Battery low or poorly connected	Check the plug and replace it
2	Empty pipe	No water in the pipe section or water is not filled in the pipe section	Full-fill the pipe with water and remove the air bubbles
3	Backflow	Installed in the opposite direction.	Do installation according to arrows direction
4	Overrange	The current water flow is too high	Reduce water flow or change to use correct meter
5	EE failure	EE memory failure	Contact factory for support
6	Sensor	Ultrasonic sensor failure	Contact factory for support

7.Packing List

NO.	PRODUCT NAME	UNIT	QTY
1	WATER METER	PCS	1
2	ACCESSORIES（OPTIONAL）	SET	1
3	MANUAL	PCS	1
4	CERTIFICATE	PCS	1

8.Transportation & Storage

1. Handle the instrument carefully during transportation to avoid severe impact.
2. Storage environment temperature (-25 ～ 55) ℃, relative humidity is less than 80%, prevent strong electromagnetic field and direct sunlight.
3. The product stored at least 30cm away from the ground, at least 1m away from the four walls, and no less than 2m away from the heating equipment.
4. Keep the warehouse dry and free of corrosive materials, gases and dangerous goods.

9.Warranty

The ultrasonic water meter defaults to the whole machine for one year free warranty from the date of shipment, lifetime maintenance. However, damage caused by:
1) The seal mark (lead seal) of the ultrasonic water meter is opened and destroyed;
2) Any part of the ultrasonic water meter is artificially damaged;
3) Ultrasonic water meters are used in conditions beyond the specifications or damaged by chemical pollution;
4) The pipeline is not cleaned before installation or there are too many impurities in the pipeline, which cause damage to the flow sensor;
5) Failure and damage caused by not selecting the appropriate product model specifications.

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