Sandwich-type Water Meter

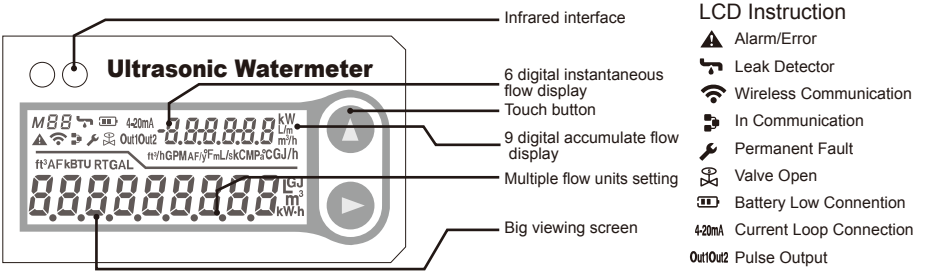
Quick Installation and Operation Instructions

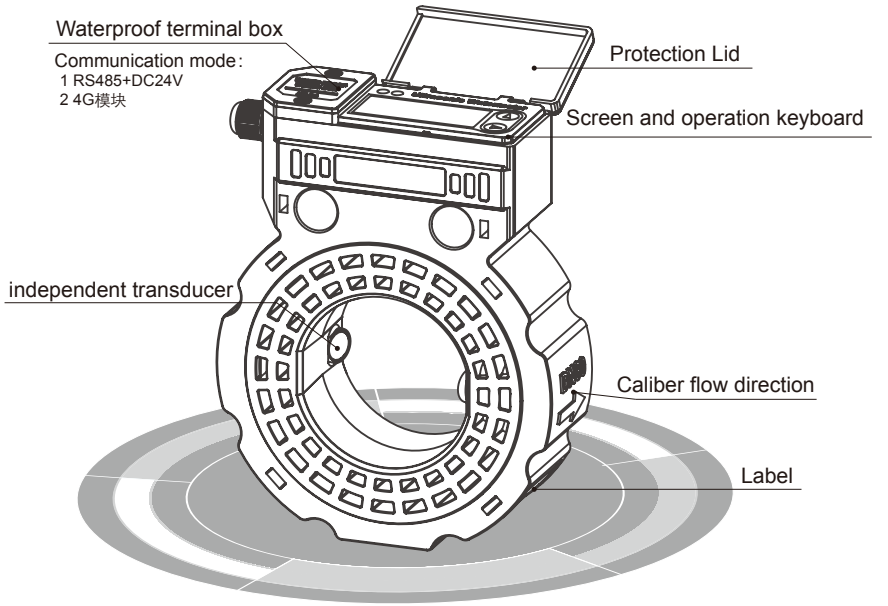
Welcome to use Sandwich-type Ultrasonic Water Meter.

The Sandwich-type ultrasonic water meter is a newly developed product with low cost, high measurement accuracy, small power consumption, stable and reliable characteristics, which is according to ISO4064-2014, GB/T778-2018 and the other standards, based on ultrasonic time-deference measurement technology.

1.Parts Descriptions

The ultrasonic water meter has wired type as the standard configuration, wireless type need to be customized.

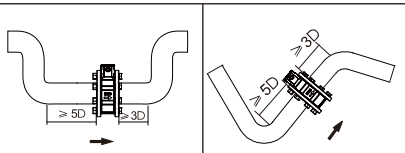
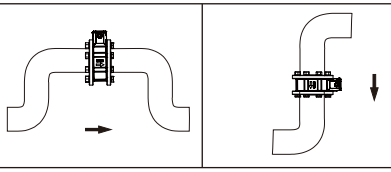




2.Installation Instructions

2. 1 Choosing install position

When install the water meter, the upstream straight pipe line should be ≥5D, downstream straight pipe line should be≥ 3D, 20D from the pump(D is the pipe diameter), and ensure water must be full of the pipe lines.

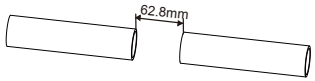
Correct installation point	Wrong installation point
	
Lowest point of the pipe line， water be full of the pipe. Flow is vertically or obliquely upward Upstream straight pipe line >=5D	Highest point of the pipe line, water would be not full of the pipe. Flow is vertically or obliquely downward. Upstream straight pipe line <=3D.

▶ Note：Arrow direction is the flow direction.

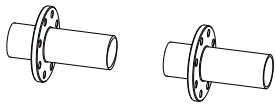
2. 2 Installation Method

1.Confirm installation size

Cut 62.8mm of pipeline
- water meter thickness 50.8mm
- 2pcs seal gasket thickness 6mm
- Reserve space is 6mm

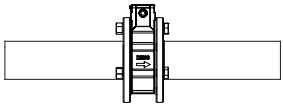


2.Install companion flange



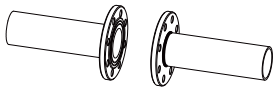
3.Fixed flange

Install water meter with 3 screws to fix the flange averagely, then spot welding.



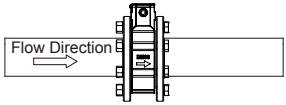
4.Weld flange

Take out water meter and weld flange.



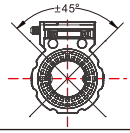
5.After cooling install with seal gasket, and tighten screws.

▶ Make sure the direction signing on water meter is as the same as the direction of real flow.

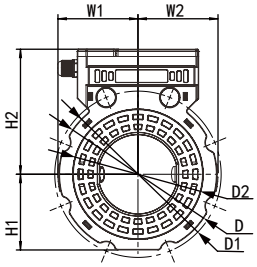


6.Installation angle

Top of the pipe line may be not full of water, suggest to install the water meter on vertical direction of pipe line within a ±45 degree angle, please refer to attached picture.



2.3 Water Meter Dimension



Nominal diameter (mm)	Water meter dimension (mm)					Flange Dimension (mm)					Pressure level	Weight kg
	L	H1	H2	W1	W2	Outside Diameter D	Diameter of bolt circle D1	Bore Diameter ×Quantity Φ×n	Sealed Face			
									D2	f		
DN50	50.8	59	102.5	77.5	63.5	125	125	18*4	93.5	1	1.6	0.71
DN65	50.8	66	112	77	71	152	145	18*4	113	1	1.6	0.84
DN80	50.8	73	120	77	77	152	160	18*8	125	1	1.6	0.89
DN100	50.8	85	130	90	90	178	180	18*8	154	1	1.6	1.11
DN125	50.8	102	156	109	109	210	215	18*8	184	1	1.6	1.32
DN150	50.8	114	165	120	120	238	240	22*8	210	1	1.6	1.5

3.3.Menu Instruction

3.1 Operation Method

There are two capacitive touch keys on the water meter surface, which are indicated as ▲and ►.

▲:scroll up; change number; active keys and display (press for 5 seconds).

►:scroll down; move modify cursor.

▲►: slide from ▲to►, enter to next step menu; confirm the operation.

►▲: slide from►to ▲,quit the current menu.

3.2 Windows Display and Menu Instruction

There are 4 main menu options for the water meter

E.g.:In the main menu M-0, press the modifying key▲► will enter in the sub menu M01, press ► will display sub menu M02. Press▲ ►will return to the main menu M-0.

M-0: measured value and work condition, for short DISP		M-1:pipe parameter and history searching, for short CHEC	
M00	Display instantaneous and positive accumulated flow rate (water meter	M10	Password enter for current menu
M01	Display heat flux and accumulated heat flux (Calorimeter)	M11	Display channel number,prober distance, inside diameter
M02	Display hydraulic pressure and water temperature	M12	Display acoustic sampling time, damping coefficient, angle coefficient
M03	Display supply water temperature T1 and return water temperature T2	M13	Display negative accumulation
M04	Display signal intensity and battery voltage	M14	Display daily net accumulation
M05	Display total propagation time(microsecond) and propagation time difference(nanosecond	M15	Display monthly net accumulation
M06	Display date, time, week	M17	Display total working time and fault working time
M07	Automatic verification window	M18	Display production date (calibration read in), Calibration work number
M08	Manual verification window		
M09	Display Instrument serial number and software version number		
M0A	Display the whole screen		
M-2: Communication Setting, for short COM		M-3: Flow Rate Setting and Modification, for short CORR	
M21	Set date, time, week	M32	Display current zero value, low flow excision value
M24	Set RS485 communication address	M33	Set instrument coefficient
M25	RS485/MBUS communication baud rate verify	M34	Set low flow excision value
M26	Debugging with communication data display	M35	Reset accumulator (modify cumulant)
		M36	Display instantaneous flow rate and static state zero setting
		M39	Set the scale of the meter's positive/negative cumulative flow retention
		M3B	Manually set the traffic type for the default display window M00

4.Technical Parameter

4. 1 Flow Parameter

Nominal diameter (mm)	Measurement range ratio R	Flow rate (m³/h)				
		Starting Flowrate	Minimum Flowrate Q1	Transitional Flowrate Q2	Permanent Flowrate Q3	Overload Flow rate Q4
DN50	63	0. 159	0. 635	1. 016	40. 000	50. 000
DN65	63	0. 250	1. 000	1. 600	63. 000	78. 750
DN80	63	0. 397	1. 587	2. 540	100. 000	125. 000
DN100	63	0. 635	2. 540	4. 063	160. 000	200. 000
DN125	63	0. 992	3. 968	6. 349	250. 000	312. 500
DN150	63	1. 587	6. 349	10. 159	400. 000	500. 000

4. 2 Technology Parameter

Items	Parameters
Executive standard	ISO4064-2014、GBT778-2018
Accuracy Rating	2 Class
Measurable fluid	Water,sewage,seawater (other liquid need be customized),Liquid full of pipeline
Fluid temperature	0.1-30℃
Work environment	temperature:-30-45℃；humidity:100%(RH)
Bearable pressure	1.6MPa
Pressure loss	No pressure loss
Sensitivity grade of upstream flow field	U5
Sensitivity grade of downstream flow field	D3
Climate and mechanical environment safety grade	C Class
Electromagnetism compatibility grade	E2 Class
Communication interface	RS485/USART/infrared interface ; M-BUS alternatives,4G moudle \ NB-lot wireless transmission
Output signal	OCT、4-20mA alternatives
Power supply	Built-in lithium batteries/external DC8-24V power supply
Protection grade	IP68
Spot display	Screen with duplicate rows: 9 digital accumulate flow display,6 digital instantaneous flow display,arious condition prompt symbols and units.
Data storage	Ferroelectric storage parameters usage, recording accumulate flow of 31mouths and 31days before automatically
Flow measurement cycle	Measurement condition: 1time/second(settable); Authentication condition: 4times/second
Power consumption	Standard condition < 30uA, each battery can work over 15 years constantly
Materials	Measuring pipe: nylon + glass fiber; sensor: PEEK; protection cover:ABS

5.Calibration Method

The water meter is calibrated via constant-current method.

Constant-current method is to make the calibration device (standard water meter) and tested water meter into stable flow state at a set flow point, calibrate the water meter by measuring accumulative flow at the same time.

Different calibration methods may cause errors. If use start-stop method to calibrate the water meter, it may cause errors. Try to extend calibrating time when you use start-stop method to calibrate water meter, and make sure the duration of each turn on time should be more than 60 seconds at least. The less time you calibrate, then bigger error you will get.

6.Other

For other details please refer to the “ultrasonic water meter user manual”.