

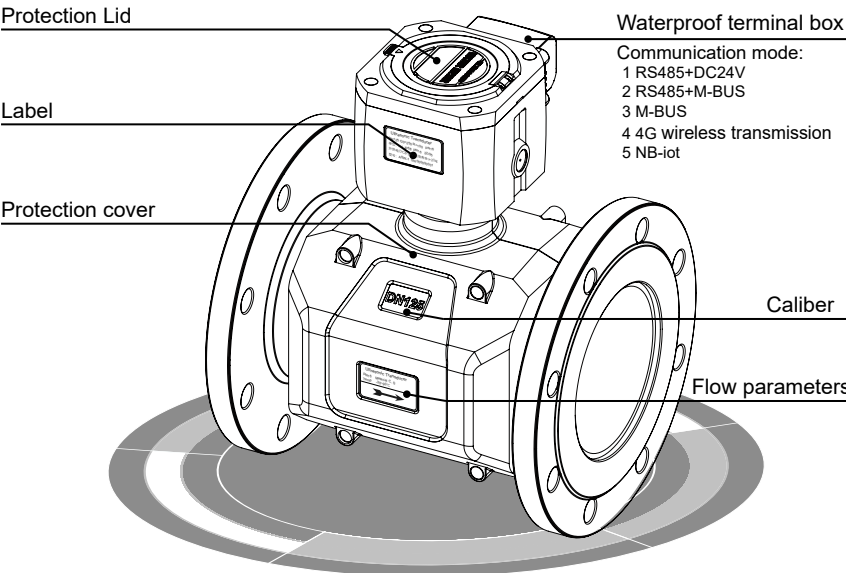
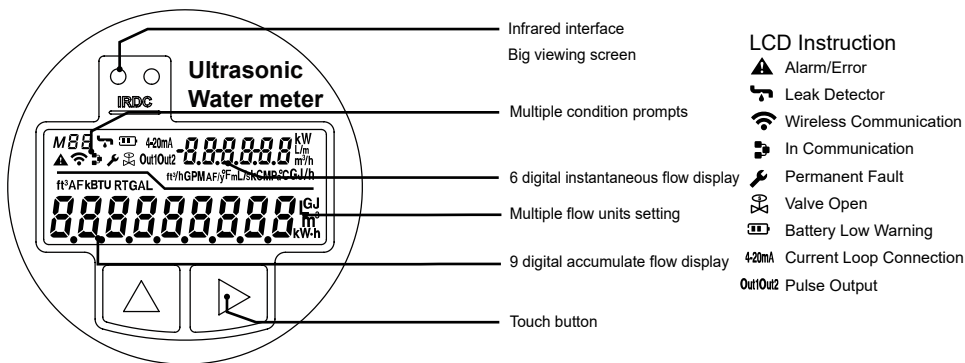
Ultrasonic Water Meter

Quick Installation and Operation Instructions

Welcome to use the Ultrasonic Water Meter.

The 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.

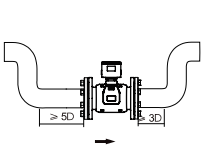
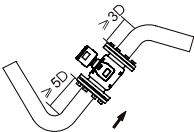
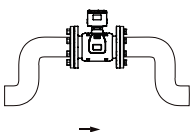
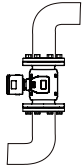
1.1. Parts Descriptions



2.Installation Instructions

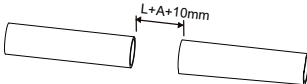
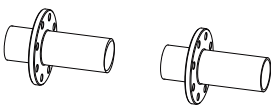
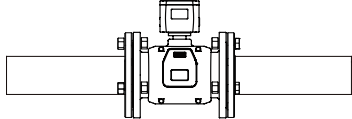
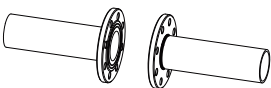
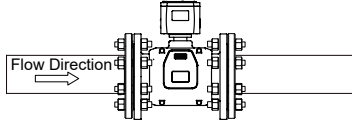
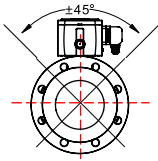
2. 1 Choosing install position

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

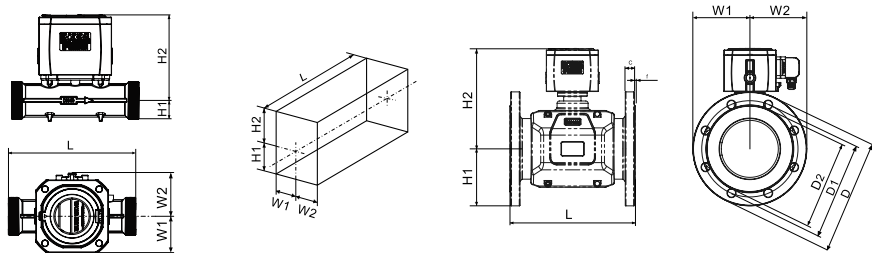
Correct installation point		Wrong installation point	
			
Lowest point of the pipe line, water be full of the pipe. Flow is vertically or obliquely upward Upstream straight pipe line $\geq 5D$		Highest point of the pipe line, water would be not full of the pipe. Flow is vertically or obliquely downward.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

► Note: Arrow direction is the flow direction.

2. 2 Installation Method

<p>1. Confirm installation size</p> <p>Pipe line length { water meter thickness L mm 2pcs seal gasket thickness A mm Reserve space is 10mm</p> 	<p>2. Install companion flange</p> 
<p>3. Fixed flange</p> <p>Install water meter with 3 screws to fix the flange averagely, then spot welding.</p> 	<p>4. Weld flange</p> <p>Take out water meter and weld flange.</p> 
<p>5. After cooling install with seal gasket, and tighten screws.</p> <p>► Make sure the direction sign on water meter is same with the real flow direction.</p> 	<p>6. Installation angle</p> <p>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 $\pm 45^\circ$ degree angle, please refer to attached picture.</p> 

2.3 Water Meter Dimension



Nominal diameter (mm)	Dimension (mm)					Thread Connection		thread length	Weight kg	Pressure MPa
	L	H1	H2	W1	W2	Pipe screw thread A	Pipe screw thread B			
DN15	165	14	123	57	130	G3/4B	G3/4B	10	1.5	1.6
DN20	195	18	125	57	130	G1B	G1B	12.5	1.5	1.6
DN25	160	22	127.5	57	130	G1 1/4B	G1 1/4B	13	1.5	1.6
DN32	180	25	130	57	130	G1 1/2B	G1 1/2B	14.5	2	1.6
DN40	200	33.5	134	57	130	G2B	G2B	16	2.2	1.6

Nominal diameter (mm)	Dimension (mm)					Flange Dimension (mm)						Pressure MPa	Weight kg
	L	H1	H2	W1	W2	Flange Diameter D	Bolt Hole Center D1	Bolt hole xQuantity φxn	Sealing surface		Flange thickness C		
DN50	200	82.5	180	82.5	108	165	125	18*4	102	2	19	1.6	10
DN65	200	92.5	189	92.5	108	185	145	18*4	122	2	20	1.6	11.5
DN80	225	100	197	100	108	200	160	18*8	138	2	20	1.6	13.5
DN100	250	110	207	110	110	220	180	18*8	158	2	22	1.6	18.5
DN125	275	125	220	125	125	250	210	18*8	188	2	22	1.6	23.5
DN150	300	142.5	233	142.5	142.5	285	240	22*8	212	2	24	1.6	30

Nominal diameter (mm)	Dimension (mm)					Flange Dimension (mm)						Pressure MPa	Weight kg
	L	H1	H2	W1	W2	Flange Diameter D	Bolt Hole Center D1	Bolt hole xQuantity φxn	Sealing surface		Flange thickness C		
DN200	350	170	257	170	170	340	295	22*12	268	2	26	1.6	35.5
DN250	450	200.5	284.5	200.5	200.5	405	355	26*12	320	2	29	1.6	58
DN300	500	230	310	230	230	460	410	26*12	378	2	32	1.6	76
DN350	500	260	350	260	260	520	470	26*16	438	4	35	1.6	108
DN400	600	290	380	290	290	580	525	30*16	490	4	38	1.6	145
DN450	700	320	410	320	320	640	585	30*20	550	4	46	16	185
DN500	800	357.5	447.5	357.5	357.5	715	650	33*20	610	4	46	1.6	232

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 M-01, press ► will display sub menu M-02. 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 flow rate and net 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	Display Calibration window	M18	Display production date (calibration read in), Calibration work number
M08	Batch controller (irrigation controller)		
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
		M37	Manual correction of water supply temperature T1
		M38	Manual correction of backwater temperature T2
		M39	Set the scale of the meter's positive/negative cumulative flow retention
		M3A	Set the scale of positive/negative accumulated heat retention on the heat meter
		M3B	Manually set the traffic type for the default display window M00
		M3C	Set the heat unit manually

4. Technical Parameter

4. 1 Flow Parameter

- single channel industrial grade small calibre ultrasonic water meter (R=250)

Nominal diameter (mm)	Measurement range ratio R	Flow rate (m³/h)				
		Starting Flowrate	Minimum Flowrate Q1	Transitional Flowrate Q2	Permanent Flowrate Q3	Overload Flowrate Q4
DN15	250	0.0025	0.0100	0.0200	2.5000	3.1250
DN20	250	0.0040	0.0160	0.0320	4.0000	5.0000
DN25	250	0.0063	0.0252	0.0504	6.3000	7.8750
DN32	250	0.0016	0.0640	0.1280	16.0000	20.0000
DN40	250	0.0250	0.1000	0.2000	25.0000	31.2500

- dual channel big calibre ultrasonic water meter (R=100)

Nominal diameter (mm)	Measurement range ratio R	Flow rate (m³/h)				
		Starting Flowrate	Minimum Flowrate Q1	Transitional Flowrate Q2	Permanent Flowrate Q3	Overload Flowrate Q4
DN50	100	0.100	0.400	0.640	40	50.00
DN65	100	0.158	0.630	1.008	63	78.75
DN80	100	0.250	1.000	1.600	100	125.00
DN100	100	0.400	1.600	2.560	160	200.00
DN125	100	0.625	2.500	4.000	250	312.50
DN150	100	1.000	4.000	6.400	400	500.00
DN200	100	1.575	6.300	10.080	630	787.50
DN250	100	2.500	10.000	16.000	1000	1250.00
DN300	100	4.000	16.000	25.600	1600	2000.00
DN350	100	4.000	16.000	25.600	1600	2000.00
DN400	100	6.250	25.000	40.000	2500	3125.00
DN450	100	6.250	25.000	40.000	2500	3125.00
DN500	100	10.000	40.000	64.000	4000	5000.00

- four-channel big calibre ultrasonic water meter (R=250)

Nominal diameter (mm)	Measurement range ratio R	Flow rate (m³/h)				
		Starting Flowrate	Minimum Flowrate Q1	Transitional Flowrate Q2	Permanent Flowrate Q3	Overload Flowrate Q4
DN80	250	0.100	0.400	0.800	100	125.00
DN100	250	0.160	0.640	1.280	160	200.00
DN125	250	0.250	1.000	2.000	250	312.50
DN150	250	0.400	1.600	3.200	400	500.00
DN200	250	0.630	2.520	5.040	630	787.50
DN250	250	1.000	4.000	8.000	1000	1250.00
DN300	250	1.600	6.400	12.800	1600	2000.00
DN350	250	1.600	6.400	12.800	1600	2000.00
DN400	250	2.500	10.000	20.000	2500	3125.00
DN450	250	2.500	10.000	20.000	2500	3125.00
DN500	250	4.000	16.000	32.000	4000	5000.00

4. 2 Technology Parameter

Items	Parameters
Executive standard	ISO4064-2014、GBT778-2018
Measurable fluid	Water,sewage,seawater (other liquid need be customized),Liquid full of pipeline
Accuracy Rating	2 Class
Fluid temperature	0.1-30℃
Work environment	temperature:-30-45℃; humidity:100%(RH)
Bearable pressure	1.6MPa, 2.5MPa alternatives
Pressure loss	DN15-DN40: ΔP40 ; ≥DN50: ΔP10
The sensitivity grade of upstream	U3
The sensitivity grade of downstream	D0
Climate and mechanical environment	C Class
Electromagnetism compatibility grade	E2 Class
Communication interface	RS485/USART/infrared interface, M-BUS alternatives;NB-Iot、 4G wireless transmission
Output signal	OCT alternatives
Power supply	Built-in lithium batteries(3.6V,4Ah)/external DC8-24V power supply
Protection grade	IP68
Local 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 31moths and 31days before automatically
Flow measurement cycle	Measurement condition: 1time/2second(settable); Authentication condition: 4times/second
Power consumption	Standard condition < 30uA, working over 20 years constantly
Materials	Measuring pipe: carbon steel(stainless steel for sensor); sensor: PEEK; protection cover:nylon plus glass fiber

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”.