

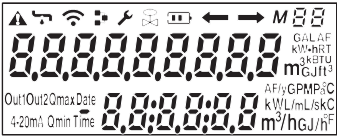
LRF-2000W Ultrasonic Water Meter

Quick Installation and Operation

Welcome to use LRF-2000W ultrasonic water meter.
The highly integrated LRF-2000W ultrasonic water is designed and manufactured strictly according to ISO4064-1:2005,GB/T778.1-2007 etc.,based on ultrasound transit-time measurement technology.

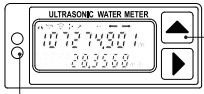
1.Parts Description

LRF-2000W ultrasonic water meter has wired type as standard configuration,wireless type need to be customized.



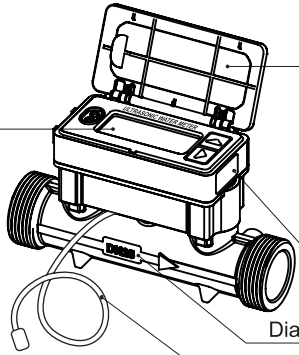
LCD Instruction:

- ▲ Alarm/ Error
- 🔔 Leak Detector
- 📶 Wireless Communication
- ↔ In Communication
- 🔧 Permanent Fault
- 🔒 Valve Open
- 🔋 Battery Low Warning
- ↔ Liquid Direction
- 4-20mA Current Loop Connection
- Out1Out2 Pulse Output



Touch Key

Infrared interface



Protection cover

LCD & Keypad

Wiring Instruction

Diameter and Direction

Communication and output wires

Wiring Instructions

- RS485 & MBUS
 - Black Four-core cable
 - Red MBUS+
 - Black MBUS-
 - Yellow 485+
 - Green 485-

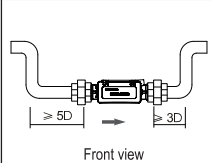
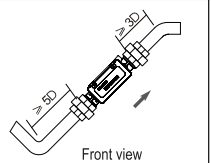
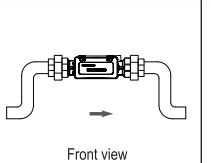
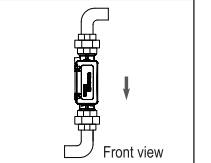
Parts Description

► PS: MBUS does not need to distinguish between positive and negative.

2.Installation Instructions

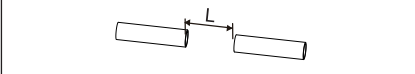

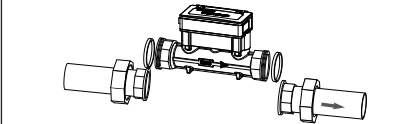
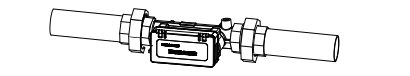
2. 1 Choose the installation point

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 the water should be full of pipe lines.

Correct installation point		Wrong installation point	
			
<ul style="list-style-type: none">✓ Lowest point of the pipe line, water will be full of pipe.✓ Flow is vertically or obliquely upward.✓ Upstream straight pipe line $\geq 5D$.		<ul style="list-style-type: none">✗ Highest point of the pipe line, water would be not full of pipe.✗ Flow is vertically or obliquely downward.✗ Upstream straight pipe line $\leq 3D$.	

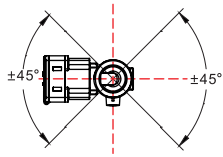
► Note: Arrow direction is the flow direction.

2. 2 Installation Method

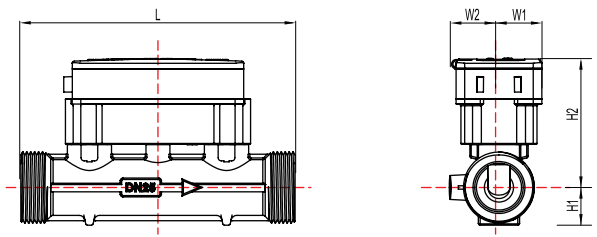
<p>1.Confirm installation size Cut the pipeline on the installation point, leave the installation space according to the water meter and union dimension as shown in below picture.</p> 	<p>2. Wrap the Teflon tape on the pipe thread and then install the unions as shown in below picture.</p>  <p>Note: Above are double internal thread unions.</p>
<p>3.Connect the union with water meter thread, tightening.</p>  <p>► Make sure direction sign on water meter is same with the real flow direction.</p>	<p>4.Tightening the unions with wrench after concentric correction of water meter and pipe line.</p> 

Installation angle

Top of the pipe line may be not full of water, suggest to install the water meter on horizontal direction of pipe line within a $\pm 45^\circ$ -degree angle, pls refer to below picture.



2.3 Water Meter Dimension



► Note: Below is theoretical value, pls refer to actual received product. to be customized

Unit: mm

Nominal Diameter	Flow Meter Dimension					Thread Dimension			Weight (Kg)
	L	H1	H2	W1	W2	Thread standard	Thread Length	Thread Standard	
DN15	165	15	71	25	28	G3/4	11	GB/T7307	0.7
DN20	130	19	73	25	28	G1	13		0.7
DN25	160	22	76	25	33	G1 1/4	14		0.9
DN32	180	25	78	25	37	G1 1/2	14		1.1
DN40	200	34	82	30	37	G2	16		1.6

3. Menu Instruction

3.1 Operation Method

Water meter is equipped with two touch keys “▲” and “▶”, slide from “▲” to “▶” is “▲▶” key to edit, slide from “▶” to “▲” is the key to quit.

Formula: up click “▲” is up; down click “▶” is down;

Slide from up to down “▲▶” is modification ; Slide from down to up “▶▲” is quit.

3.2 Windows Display Instruction

Windows	No.	Windows Functions
Main Menu	M01	Display net cumulative and instantaneous flow
	M02	Display supply and return water temperature and temperature difference.
	M03	Calendar, display date and week on first line, display hour and minute on second line.
	M04	Display signal strength and error code on first line, display voltage and temperature on second line.
	M05	Calibration Menu
	M06	Batch Controller(Irrigation controller)
	M07	Display ESN and software version

Water meter includes 5 kinds of menus: main menu, secondary menu 1, secondary menu 2, batch control menu and time-accumulated menu. You can enter any menus by the modification key “▲▶”.

Example:

On M01, press “▲▶” to access month cumulative flow.

On M03, press “▲▶” to access secondary menu 1 (M10~M19).

On M19 of secondary menu 1, press “▲▶” to access secondary menu 2 (M20~M2A).

On M04, press “▲▶” to access day cumulative flow.

On M05(start-stop calibration state), press “▲▶” to access constant-current method calibration state.

On M06, press “▲▶” to access batch control and time-accumulative menu (M30~M3C).

► Note: Pls refer to ultrasonic water meter user manual for details of the menus.

4. Technical Parameter

4. 1 Flow Rate

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	200	0.003	0.013	0.020	2,500	3,125
DN20	200	0.004	0.016	0.026	3,200	4,000
DN25	100	0.010	0.040	0.064	4,000	5,000
DN32	100	0.016	0.063	0.101	6,300	7,875
DN40	100	0.050	0.200	0.320	20,000	25,000

4. 2 Technical Parameter

Performance	Parameters
Working Pressure	2.5 MPa
Temperature	T30
Working Environment	-25°C~55°C, IP68 Protection
Pressure Loss	ΔP63
Display Range	Multi-lines show 9-bit cumulative flow, 6-bit instantaneous flow, signal strength
	flow direction, error, communication status
Unit	m³, USG, Liter, cubic foot, Acre Feet
Operating Mode	Two capacitive touch keys support sliding operation.
Communication Interface	Physically independent RS485 and infrared interface. LORA/ NB-IOT, WIFI, USART are optional.
Output	2 way of OCT output is optional, can simulate dipulse output of mechanical water meter.
Communication Protocol	MBUS, MODBUS, ASCII, CJ188
Power Supply	3.6V 4Ah lithium battery (battery life>10 years). It will operate power save functions when there is no water and flow in pipe
	DC12~30V external power supply through MBUS interface; data will be permanently saved after power off.
Power consumption	<0.1mW
Material	Pipe body: copper; others: PEEK

5. Calibration Method

Our 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 the error. If you use start-stop method to calibrate our water meter, it may cause error. Pls try to extend the calibrate time when you use start-stop method to calibrate our water meter, 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

Pls refer to ultrasonic water meter user manual for details of the menu instruction.