# LRW-2000K Sandwich Type Ultrasonic Flow Meter (Water Meter)

# Quick Installation and Operation

Welcome to use LRW-2000K ultrasonic water meter.

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

## 1.Parts Description

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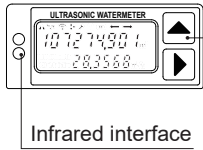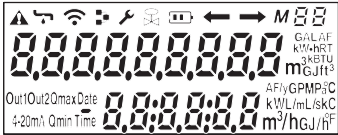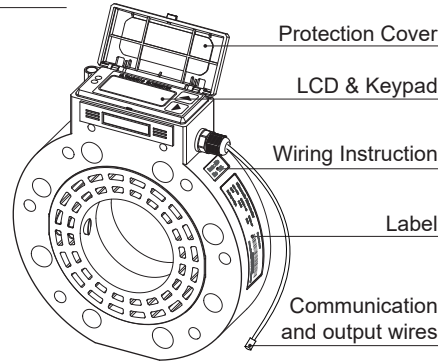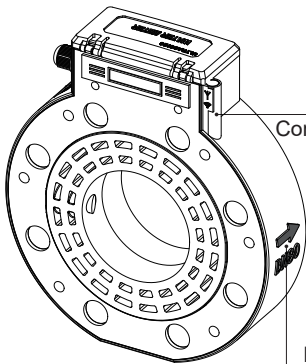


Touch Key

Infrared interface

### 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 |

Protection Cover

LCD & Keypad

Wiring Instruction

Label

Communication and output wires

Front View of Wired Type Water Meter



Antenna

Communication Mode

1 LORA
2 NBlot
3 WIFI
4 GPRS
5 Bluetooth

Diameter and Direction

Rear View of Wireless Type Water Meter

### Wiring Instructions

▶ RS485
  Black Two-core cable
  Brown 485+
  Blue 485-

▶ MBUS
  Grey Two-core cable
  Brown MBUS+
  Blue MBUS-

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

▶**TTL**
  Black Three-core cable
  Brown GND
  Yellow TXD
  Blue RXD

▶**RS485 & MBUS**
  **& Dual channel OCT**
  Black Eight-core cable
  Red MBUS+
  Black MBUS-
  Yellow 485+
  Green 485-
  Brown OCT1+
  Blue. OCT1-
  White. OCT2+
  Grey. OCT2-

▶ 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 ≥5D, downstream straight pipe line should be ≥3D(D is the pipe diameter), and the water should be full of pipe lines.

| Correct installation point | | Wrong installation point | |
|---|---|---|---|
|  |  |  |  |
| Lowest point of the pipe line, water will be full of pipe. | | Highest point of the pipe line, water would be not full of pipe. | |
| Flow is vertically or obliquely upward. | | Flow is vertically or obliquely downward. | |
| Upstream straight pipe line≥5D. | | Upstream straight pipe line≤3D. | |

▶ Note: Arrow direction is the flow direction.

## 2. 2 Installation Method

### 1.Confirm installation size

Cut 62.8mm of the pipeline { water meter thickness is 50.8mm / 2 pcs seal gasket thickness is 6mm / reserve space is 6mm



### 2. Install companion flange



### 3.Fixed flange

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



### 4.Weld flange

Take out water meter and weld flange.



### 5.Install water meter with seal gasket after cooling, tighten the screws

▶ Make sure direction sign on water meter is same with the real flow direction.



### 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, pls refer to below picture.



## 2.3 Water Meter Dimension
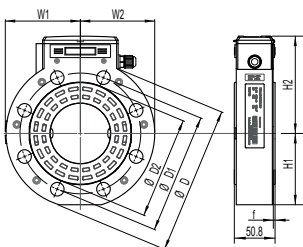


▶ Note: Below is theoretical value, pls refer to actual received product.　Unit: mm

| Nominal Diameter | Water Meter Dimension | | | | | Flange Dimension | | | Ralsed Face | | Weight (Kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | L | H1 | H2 | W1 | W2 | Outside Diameter D | Diameter of Bolt Circle D1 | Bore Diameter x Quantity φ×n | Outside Diameter D2 | Height f | |
| DN80 | 53.6 | 94.5 | 129 | 99.5 | 98.5 | 197 | 160 | 18×8 | 135 | 1 | 1.1 |

# 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 |
| DN80 | 100 | 0.250 | 1.000 | 1.600 | 100.000 | 125.000 |

## 4. 2 Technical Parameter

| Performance | Parameters |
|---|---|
| Measurement Range Ratio | 100 : 1 |
| Working Pressure | < 1.6 MPa |
| Temperature | T30 |
| Working Environment | -25°C~55°C, ≤100%RH |
| 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 |
| Other | Data saving time after power failure: 10 years |
| Protection | IP68 |

## 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。

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### Qualification Certificate

Product : Sandwich Type Ultrasonic Flow Meter (Water Meter)    Item No. : LRW-2000K

Serial No. : _____    Quality Inspector : _____

Date : _____