WD Series Ultrasonic Water Meter DN15-DN25

Instruction Manualfor Installation and Use

Welle Digital Technology Co., Ltd.

Important Reminder

Please read this instruction manual carefully before installation. This instruction manual is mainly aimed at trained professionals, so it does not include basic installation steps. In case of any changes to the product model and appearance, please refer to the actual product on site. This instruction manual is also applicable without affecting the product function description. If you need to know the detailed changes, please contact our company. The copyright of this instruction manual belongs to Xinjiang Western United Digital Industry Development Co., Ltd., and our company reserves the right of final interpretation of this instruction manual. Please operate strictly in accordance with this instruction manual to avoid any losses to your relevant rights and interests.

►This product is a precision measuring instrument and has been strictly verified before leaving the factory. Please have it operated by professional personnel；

►If this product fails to operate properly or requires maintenance, please contact our company or our officially authorized dealers；

►This product is a precision measuring instrument. Please do not drop it or subject it to impacts.

Unless otherwise specified, the parameters of the products delivered from the factory are set as default values. If you have any special requirements, please state them when placing an order.

Quality Assurance：

►The design and production are carried out in compliance with the national standards of the People's Republic of China: GB/T 778.1-2018~GB/T 778.5-2018 "Cold Water Meters and Hot Water Meters for Drinking Water", CJ/T434-2013 "Ultrasonic Water Meters", and CJ266-2008 "Safety Rules for Cold Water Meters for Drinking Water"；

►The ex-factory verification is based on the National Metrological Verification Regulation of the People's Republic of China, JJG162-2019 "Verification Regulation of Cold Water Meters for Drinking Water"；

► Certificate of Approval for Type of Measuring Instruments of the People's Republic of China 2019F154-37；

►Quality standard system: GB/T 19001-2016 / ISO9001:2015 standard；

►Environmental management system: GB/T 24001-2016 / ISO14001:2015 standard；

► Measurement management system: GB/T 19022-2003 / ISO10012:2003 standard.

Contents

1 Product Introduction

1.1 Product Features

➢ Low starting flow rate
➢ Installation at any angle
➢ Ultrasonic signal quality detection
➢ Water temperature detection and low-temperature alarm
➢ Complies with drinking water standards
➢ Magnetic buttons; IP68 design
➢ Supports prepayment, remote recharge, and automatic valve control based on remaining balance
➢ Compatible with GB/T 26831, CJ/T 188, and Modbus RTU communication protocols

1.2 Technical Parameters and Characteristics

1.2.1 General Situation

Accuracy class:	Class 2
Ratio (Q3:Q1):	250:1 (Customizable to 80:1, 100:1, 160:1, 400:1)
Maximum reading(m³):	99999.99999
Maximum working pressure:	1.0MPa
Temperature rating:	T50 （Customizable to T30）
Data storage:	Daily (480 entries), Monthly (36 entries), Yearly (16 entries), fault data
Protection level:	IP68
Power supply:	3.6V lithium battery
Environmental grade:	Grade O
Electromagnetic environment:	E1 (Optional E2)
Heat (cold) Carrier	Water, pipe must be fully filled
Communication options: ((optional))	M-Bus、 NB-IoT、 LoRa
Installation method:	Any angle

1.2.2 Flow Parameters

Nominal Diameter DN (mm)	15	20	25
Maximum Flow Rate Q4 (m³/h)	3.125	5	7.875
Common Flow Rate Q3 (m³/h)	2.5	4.0	6.3
Transition Flow Rate Q2 (m³/h)	0.016	0.026	0.04
Minimum Flow Rate Q1 (m³/h)	0.01	0.016	0.025
Pressure loss Rating Δp	63	63	63

1.2.3 Product Dimension

Nominal DiameterDN (mm)	15	20	25
L (mm)	165	190	225
L1 (mm)	141	141	141
L2 (mm)	259	294	345
H (mm)	92	92	92
H1 (mm)	31	28.5	25.5
W (mm)	102	102	102
Thread of the meter A (inch)	$G^3/_4B$	G1B	$G1^1/_4 B$
Union thread B (inch)	$R^1/_2$	$R^3/_4$	R1
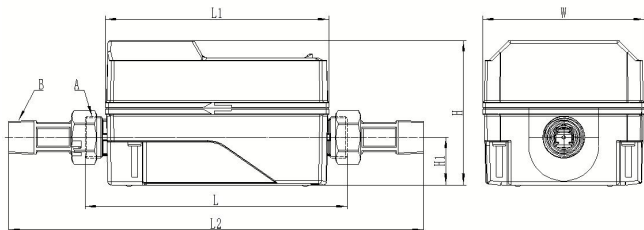
1.2.4 Identification Instructions

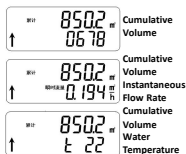**Communication Method Identifiers**

 ----M-Bus

 ----NB-IoT

 ----LoRa

2 LCD Display

The valve-controlled water meter is available in standard and prepayment models. The standard model supports remote valve control with two display modes (standard and single-screen), while the prepayment model only supports standard display. The display interface can be switched by touching the ⊙ on the upper cover with a magnetic pen.
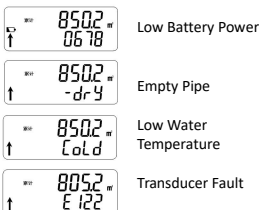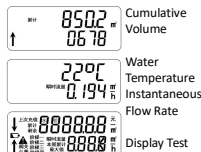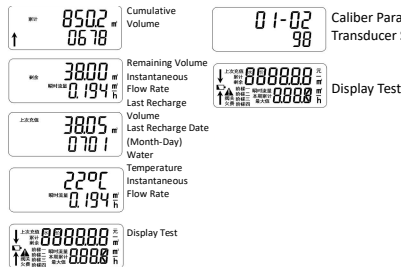
Standard Water Meter

Single-Screen Display

- 8502 m³ / 0678 — Cumulative Volume
- 8502 m³ / 0.194 m³/h — Cumulative Volume / Instantaneous Flow Rate
- 8502 m³ / t 22 — Cumulative Volume / Water Temperature

Standard Water Meter Normal Display

- 8502 m³ / 0678 — Cumulative Volume
- 22°C / 0.194 m³/h — Water Temperature / Instantaneous Flow Rate
- 888888 / 8888 — Display Test

Prepaid Water Meter Display

- 8502 m³ / 0678 — Cumulative Volume
- 38.00 m³ / 0.194 m³/h — Remaining Volume / Instantaneous Flow Rate
- 38.05 m³ / 0701 — Last Recharge Volume / Last Recharge Date (Month-Day)
- 22°C / 0.194 m³/h — Water Temperature / Instantaneous Flow Rate
- 888888 / 8888 — Display Test

High Precision Menu

- A-001 / u358 — Primary Address / Battery Voltage
- n-2000 / 1091 — Secondary Address
- 01-02 / 2018 — Real-Time Date (Month-Day) / Real-Time Date (Year)
- 00-02 / -04 — Real-Time Clock (Hour-Minute) / Real-Time Clock (second)
- 2 1h / 0h — Cumulative Operating Time / Cumulative Fault Time
- U 122 / 0005 — Main Program Version Number / Flow Correction Version Number
- 0029n / 960P — Forward and Reverse Water Time Difference
- 01-02 / 98 — Caliber Parameter / Transducer Signal Strength
- 888888 / 8888 — Display Test

Fault Alarm Display

- 8502 m³ / 0678 — Low Battery Power
- 850.2 m³ / -dry — Empty Pipe
- 850.2 m³ / CoLd — Low Water Temperature
- 8052 m³ / E 122 — Transducer Fault

Note: In prepaid mode, the valve is automatically controlled based on the remaining volume. For

example, if the remaining cumulative flow is 0, the valve will automatically close completely. After recharging, the valve will automatically open. In standard water meter mode, the valve can be controlled remotely.

The secondary menu is accessed by sending relevant commands through the software.

3 Typical Installation and Maintenance Guide

3.1 Typical Installation Diagram
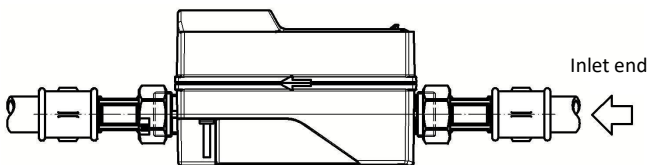
Valve-controlled ultrasonic water meter

3.2 Installation Precautions

To ensure safety and reliability, please carefully read and understand the following key points before installation:

- ➤ During use, follow the operating conditions specified on the parameter label. Failure to do so may lead to danger, and the company will not assume warranty obligations.
- ➤ When working in areas with explosive or flammable substances, effective protective measures must be taken in accordance with professional safety regulations.
- ➤ During installation, do not touch the pipe opening with your hands to avoid cuts or injuries to your fingers.
- ➤ It is strictly prohibited to install in environments with toxic, irritating, or corrosive gases, liquids, or dust.
- ➤ During installation, ensure that the surrounding environment is free of hazards that could cause harm to the human body.
- ➤ Please pay attention to the size of the valve-controlled water meter and ensure there is sufficient space for installation and maintenance.
- ➤ Thoroughly flush the pipeline before installation.
- ➤ Only trained personnel are allowed to install and dismantle the equipment.
- ➤ The water meter may only be installed and dismantled when the equipment is in a

depressurized state.

➤ The valve-controlled water meter is not equipped with lightning protection measures. Lightning protection must be implemented when wiring through buildings.

➤ The bus must use multi-core shielded twisted-pair cables with a wire diameter of no less than 0.75 mm².

➤ It is strictly prohibited to lay signal lines and high-voltage power lines in the same cable channel to avoid interference from strong electrical signals.

3.3 Common Installation Mistakes

➤ When tightening the connecting pipe nut during installation, use a wrench and avoid holding the plastic housing with your hand while tightening with the wrench, as the housing is made of plastic and may be damaged.
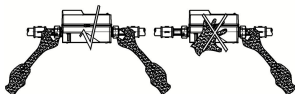
➤ When installing the water meter on a "U"-shaped pipe, place it at the lowest point, as air may accumulate at higher points in the pipeline, leading to inaccurate or no measurement.
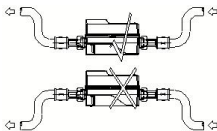
➤ When installing the water meter vertically, it must be installed on a straight pipe with upward water flow. If installed on a downward water flow pipe, the water may not fully fill the pipe section, affecting measurement accuracy or even preventing measurement altogether.
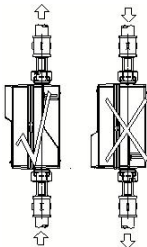
➤ When installing the water meter horizontally, keep the LCD screen facing upward. Installing it with the LCD facing downward may reduce the battery lifespan.
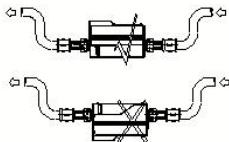
➤ During water meter installation, a check valve and ball valve should be installed before the meter. If the end user is not using water after installation, close the valves before and after the meter to keep the water in the meter pipe section stationary. Alternatively, close the valve before the meter and drain the water from the downstream pipeline to prevent pressure fluctuations in the pipe network from causing water flow fluctuations, which may lead to the meter recording these minor fluctuations.

➤ During use, the valve in front of the water meter must remain fully open.

➤ When installing the water meter, do not install a water pump after the meter. The water pump before the meter must maintain a tenfold straight pipe section distance from the water meter. Additionally, keep the meter away from large generators, motors, and frequency converters that may cause interference.

➤ During the installation of the water meter, avoid diameter-changing installations as much as possible. If diameter reduction is necessary, ensure a tenfold straight pipe section before the meter. When a large-diameter pipe section suddenly reduces to a smaller diameter, and a water meter is installed on the smaller pipe, this can create significant impact on the water meter, valves, and other components, affecting their lifespan and accuracy. In such installations, always open and close valves smoothly and gradually.

➤ The antenna installation location should be as far away as possible from large metal surfaces or dense metal meshes. The antenna should not be installed lower than 50 cm below ground level. Avoid placing the antenna in areas where it could be submerged in water, or exposed to frost, wet mud, or large amounts of water vapor.

➤ When space permits, maintain a straight pipe section with a length of ten times the pipe diameter before the meter and five times the diameter after the meter. Ensure that the pipe being measured is fully filled with water.

➤ When operating the valve, open and close it slowly to prevent water hammer, which could damage the transducer.

3.4 Installation Steps

➤ Cut the water supply pipe at the intended installation point, leaving enough space for the meter and the union fittings.

➤ Tighten the union fittings securely at the cut section of the water supply pipeline.

➤ Align the meter with the connecting fittings and install it. Use the matching sealing ring between the meter and the union fittings, as shown in the diagram.

1.The EPDM rubber sealing ring provided with the union fittings must be used.

2. First, hand-tighten the union fittings at both ends (pay attention to the water flow direction) to ensure the sealing gasket is properly compressed.

3. Secure the meter using an adjustable wrench.

4. Hazardous Substance Content Statement

Component Name	Toxic and Hazardous Substances or Elements					
	Lead Pb	Mercury Hg	Cadmium Cd	Hexavalent Chromium Cr（VI）	Polybrominated Biphenyls PBB	Polybrominated Diphenyl Ethers PBDE
Complete Unit	×	○	○	○	○	○

○：Indicates that the content of the hazardous substance in all homogeneous materials of this component does not exceed the limit requirements specified in the SJ/T11363-2006 standard.

×：Indicates that the content of the hazardous substance in at least one homogeneous material of this component exceeds the limit requirements specified in the SJ/T11363-2006 standard. However, it complies with the limit requirements set by the EU RoHS Directive 2011/65/EU.

Note：

1．The table shows that the products of this model supplied by our company do not contain these substances.

2．The interpretation rights of the component definitions in this table belong to our company.

3. If this product needs to be discarded, it can be returned to our company for centralized disposal, or it can be handed over to a qualified recycling company for processing.

5 Warranty Commitment

In order to protect your legal rights and avoid unnecessary losses, please carefully read the following content:

➢ Free Warranty: Starting from the date of purchase (based on the official purchase invoice date), within the warranty period and provided that the seal remains intact, if the product malfunctions or cannot be used normally due to quality issues, our company is responsible for free repair or replacement. However, we do not cover the costs of on-site service.

➢ Exemption from Warranty Obligation: Our company does not bear the warranty obligation for faults, malfunctions, or damage caused by the following situations and will require paid repair:
1.The product is beyond the warranty period;

2.Damage caused by misuse, self-disassembly, improper repairs, or signs of intentional damage；

3.Unauthorized removal of the product's seal；

4.Accidental factors (such as handling, collision, etc.)；

5.Other damages caused by force majeure events such as natural disasters (e.g., earthquakes, fires, etc.).

➢ After-Sales Service: If the product malfunctions during normal use, please contact the distributor or our company's after-sales service to ensure timely assistance；

➢ About the Battery: When the product displays the "Low Battery" message (indicating that there are 180 days of usage left from the display date) or reaches the battery replacement period specified by the product, the battery should be replaced within this period to avoid any impact on the product's measurement accuracy due to low battery voltage. The lifespan of the communication battery depends on the upload frequency.

Important Statement: The products provided by our company have been designed to ensure the reliability of measurement data to the best of our ability, but we cannot guarantee that all products will be free from issues. In the event of data loss caused by product malfunctions or other reasons, our company will make every effort to restore the data for the customer, but we do not assume responsibility for any losses caused by the loss of measurement data. Users are advised to regularly read and save the measurement data.

Packing List

Name	Model	Quantity	Remarks
Ultrasonic Water Meter	WD-F	1	*
Instruction Manual		1	
Certificate of Conformity		1	

* Indicates the main components.

Welle Digital Technology Co.,Ltd.

Number: +86 025-86618785
E-mail: contact@welle-group.com
Website: Http://www.wellemeter.com
Registered Address: No. 5 Industry Building, Yining Industry Zone, Xinjiang, China, 835000
Production Address: No. 5 Industry Building, Yining Industry Zone, Xinjiang, China, 835000