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HYDRASONIC UWM

Ultrasonic Water Meter

User Manual

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General Information

The UWM ultrasonic flow meter is designed based on the transit time ultrasonic technology which is suitable for measuring clean water with high accuracy. The UWM with its unique design guarantees the measurement of extremely low flow rates to account for every drop of water. Various communication options allow easy read out of the values.

Standard Compliance

SO4064:2014/OIML: R49-2013

Features

- Leak and burst Alarm
- PN16
- IP68 protection
- 10 years battery
- Temperature grade: T30/T50/70
- Various communication options

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Technical Data

Nominal diameter DN	mm	DN15	DN20	DN25	DN32	DN40
Length	mm	165	195	225/260	180/260	200/300
Q3	m3/h	2.5	4	6.3	10	16
Q4	m3/h	3.125	5	7.875	12.5	20
Start Flow	l/h	2	2	3	5	7
Meteorologic Class	100/125/160/200/250/400/500/630/800 (standard R400)					
Accuracy Class	Class 2					
Pressure Drop	Δp40					
Pressure Rating	PN16					
Temperature	T30/T50/T70; Standard T30					
Data Storage	1 year of daily data storage, 24 months historical data; Non-volatile EEPROM					
Communication	M-Bus (standard) - RS485, Pulse, LoRaWAN, NB-IoT, Sigfox (optional)					
Power	DC3.6V Lithium Battery					
Protection Class	IP68					
Operating Temperature	Temperature: -15°C to +55°C, Ambient relative humidity: <90%					
Installation	Horizontal or Vertical					
Battery Life	8 years (standard), 10 years (optional)					

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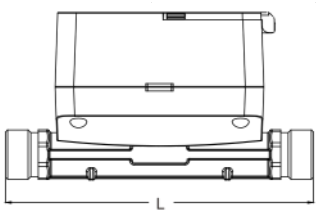
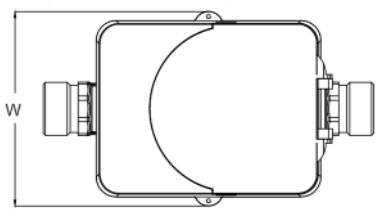
Flow Range

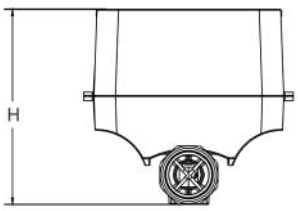
Diameter (mm)	Min. Flow (Q1)	Transitional Flow (Q2)	Permanent Flow (Q3)	Max. Flow (Q4)
	L/h		m3/h	
DN15	10.0	16.0	2.5	3.125
DN15	6.25	10.0	2.5	3.125
DN15	15.625	25.0	2.5	3.125
DN20	16.0	25.6	4.0	5.0
DN20	10.0	16.0	4.0	5.0
DN20	25.0	40.0	4.0	5.0
DN25	15.75	25.2	6.3	7.875
DN32	25.0	40.0	10.0	12.5
DN40	40.0	64.0	16.0	20.0

Dimensions

Nominal diameter DN	Unit	DN15	DN20	DN25	DN32	DN40
Connection	-	G3/4	G1	G11/4	G11/2	G2
Length (L)	mm	165	195	225/260	180/260	200/300
Width (W)	mm	97	97	97	97	97
Height (H)	mm	96.5	96.5	107	110	115







Communication Way

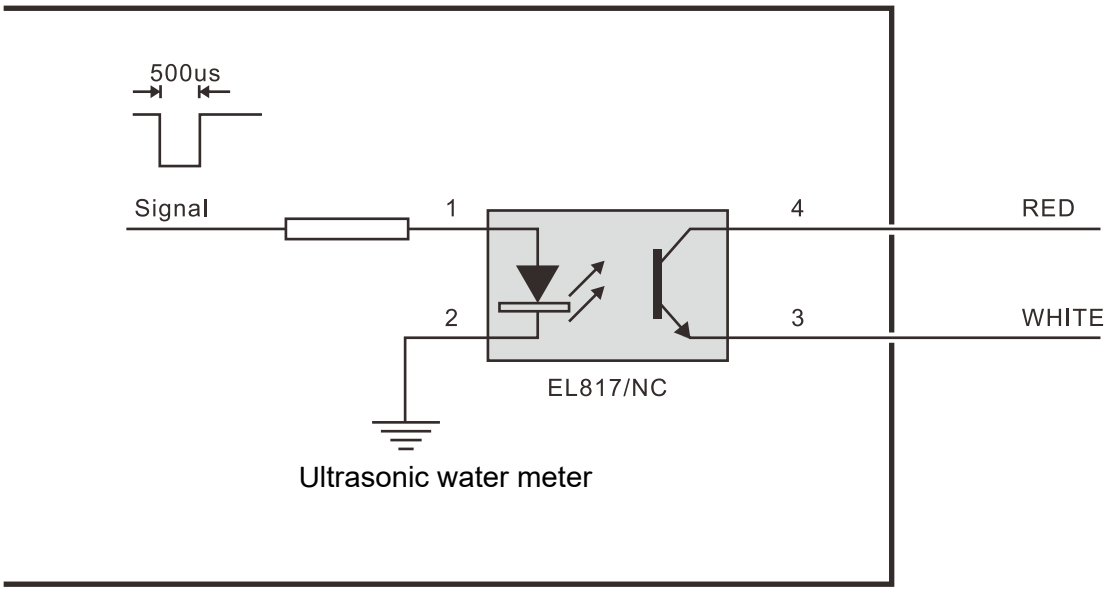
M-BUS (Optional)

Voltage: 24-25V
Current: M-Bus loads
Addressing: Primary or Secondary

Note:
Using a higher frequency than specified is not permitted and may cause malfunction of the meter.
Data transmission can occur in either compatibility mode (standard, one data frame) or full mode (three data frames).
If the meter is equipped with M-Bus, it is supplied with a two-wire cable, which can be extended using a 2 x 0.75mm² cable (using a distribution box). Ensure proper polarity when connecting the pulse output.
When reading the meter via M-Bus, the maximum allowed reading frequency must not be exceeded. Exceeding this limit may damage the meter.

Pulse Output (Optional)

Cable Length: 1 meter (connected) with galvanic isolation
Pulse Significance: 1–100 liters per pulse
Pulse Length: 1–100 ms (programmable)
Voltage: Open Drain Output



RS- 485 (Optional)

Cable: connected with four- core cable
Voltage: 5-24 V

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LoRaWAN (Optional)

ISM Band	EU433	EU868	AU915
Lora Mac	Class A		
Network Access Mode	OTAA or ABP		
Transmitting Power	19± 1 dBm(max)		
Data transmission	Each 24h as deafult		

NB- IoT (Optional)

LTE Band	B5	B8	B20	B28
Data transmission	Each 24h as default			

Sigfox (Optional)

RCZ Serial	RCZ 1/6/7	RCZ 2/4
EIRP/dBm (max)	16	24
Data transmission	Configurable	

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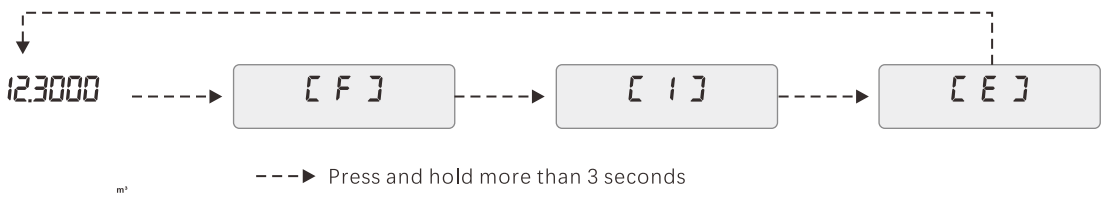
Display Information

No.	LCD icons	Meaning
1		Normal water flow
2		Real time
3		Pipe burst
4		Reverse water flow
5		Leakage
6		Reserved position
7		Alarm warning
8	ID	Meter address
9	GAL	Gallon (unit)
10	m³/h	Cubic meter per hour
11	m³	Cubic meter (unit)
12	h	Hour (unit)
13	GPM	Gallon per minute
14	°C	Water tempertaure
15		Low battery
16	T	Reserved position
17		NB-Iot communicate normally
18		Full screen

Menu List (User Loop)

To access the four menu options, press and hold the button for 3 seconds. The menus will then appear, enabling you to make your selection.



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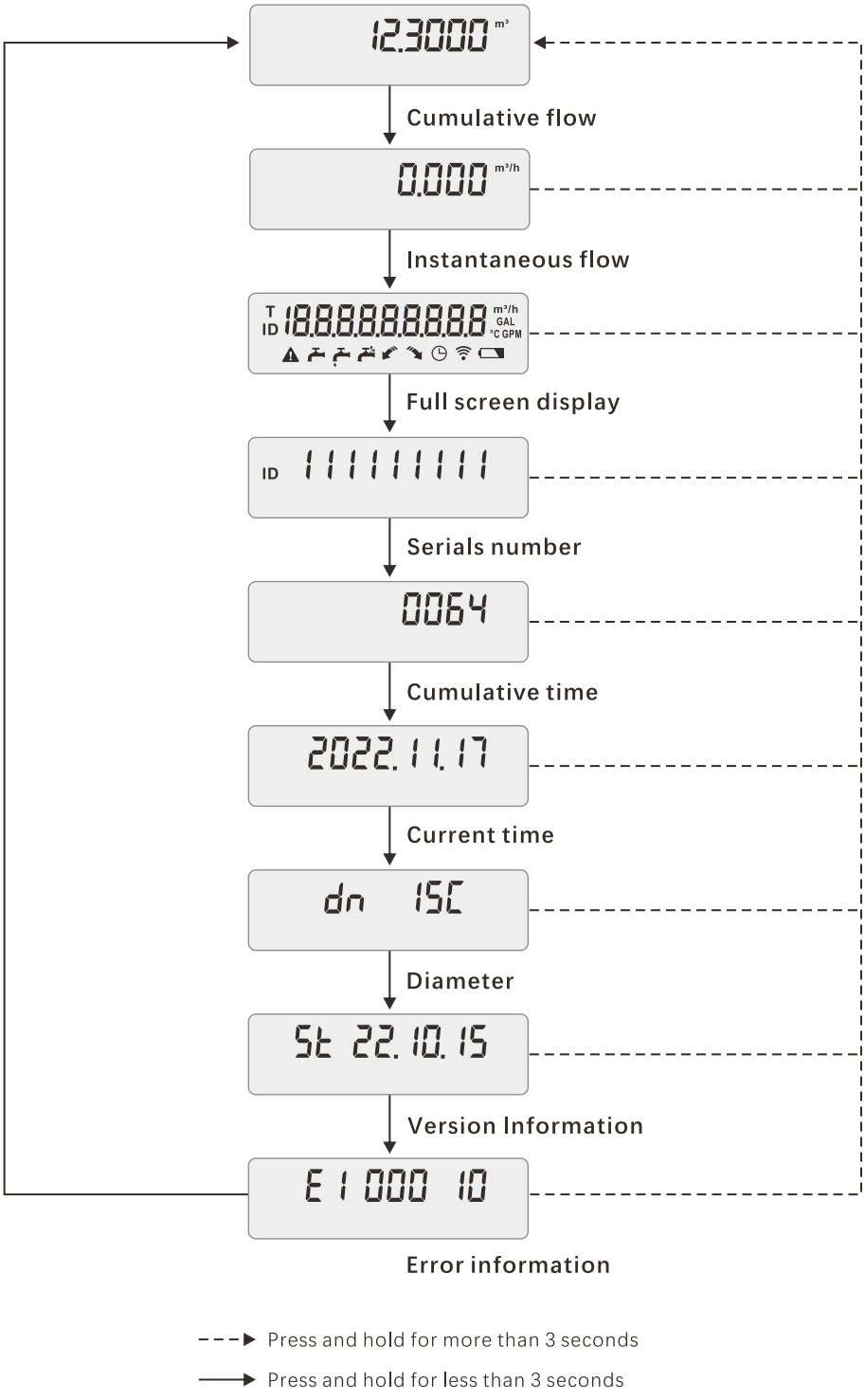
Main Menu

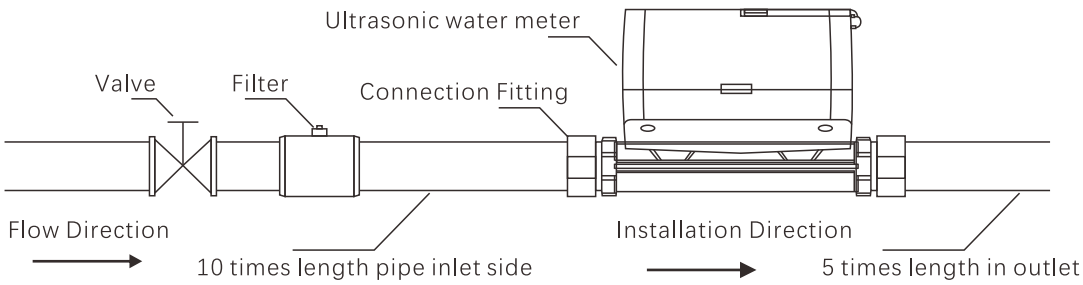
Press the button to cycle through the items under the Main Menu in the following order to view the measurement data:



Installation and Connection

Installation Conditions

1. The UWM is a precision instrument and should be handled with care to avoid damage.
2. During installation, ensure that the arrow on the meter aligns with the direction of water flow in the pipe.
3. Sufficient space should be left around the meter for easy maintenance access.
4. To maintain measurement accuracy, a straight pipe section at least 10 times the meter's length should be installed before the meter, and at least 5 times the meter's length should be installed after the meter, as illustrated in the diagram below.



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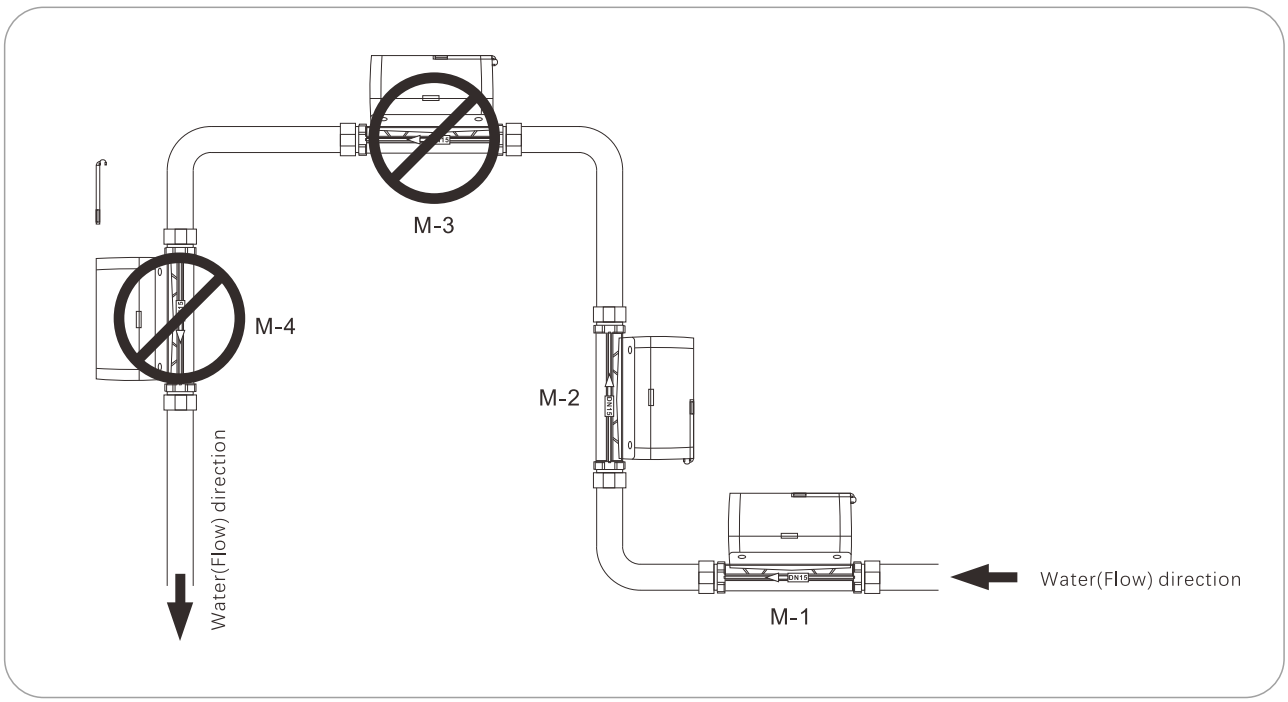
Requirements for Installation Location



1. M-1 Installation (Correct):The meter is installed in a horizontal position, positioned low in the pipe. This creates back pressure at the rear, preventing air bubble formation and ensuring accurate measurement.
2. M-2 Installation (Correct):In this vertical installation, the meter prevents air bubble generation, maintaining measurement accuracy.
3. M-3 Installation (Incorrect):The meter is mounted too high in the pipe, allowing air bubbles to accumulate. This can negatively impact measurement accuracy.
4. M-4 Installation (Incorrect):This vertical installation has a downward water inlet, which is not allowed as it may compromise the meter's performance.

Notes for Installation and Use

1. Prepare the pipe: Before installation, flush the pipe thoroughly to remove stones, debris, or other materials that could affect the water meter's performance.
2. Maintain straight pipe sections: Ensure that straight pipe sections are installed before and after the meter to comply with the U10/D5 installation standards for optimal performance.
3. Protect against challenging conditions: In environments with challenging water conditions, install a filter or check valve upstream of the meter to safeguard its operation.
4. Eliminate air bubbles: Verify that the fluid in the pipe is free of air bubbles to ensure accurate measurements.
5. Optimize wireless signal: Place the wireless water meter in a location with a strong signal. For areas with weak wireless signals (e.g., manholes or pipe wells), use an external antenna to enhance connectivity.

6. Avoid electromagnetic interference: Install the meter at least 2 meters away from AC power sources and high-frequency radiation sources to prevent electromagnetic interference that could impact measurement accuracy.
7. Protect from high temperatures and sunlight: Ensure the meter is kept away from high temperature radiation sources and direct sunlight to avoid potential damage.
8. Handle antenna carefully: Avoid pulling or placing stress on the antenna during installation or operation to prevent damage that could disrupt communication.
9. Pressure testing limits: Do not exceed a testing pressure of 1.6 MPa to maintain the flow within the meter's specified range.
10. Align with flow direction: Ensure the meter is installed in line with the flow direction indicated by the arrow on the pipe section. Both horizontal and vertical orientations are acceptable.
11. Outdoor installations: For outdoor setups, properly insulate the pipe and the meter to prevent freezing and cracking during cold weather.
12. Dry installation environment: Install the meter in a dry environment to reduce the risk of damage caused by moisture.

Issues and solutions

No.	Behaviour	Reason	Solution
1	No display	PCB is broken	change meter
2	No display	water in PCB	change meter
3	No display	Power used out	change battery
4	High Instantaneous flow	Wrong install direction	Adjust installation
5	High Instantaneous flow	Bubble in pipe	Ventilation
6	No go at all times	Bubble in pipe	Ventilation
7	No instantaneous flow	Valve is closed	Open valve
8	No instantaneous flow	Transducer is broken	change meter
9	No instantaneous flow	Bubble in pipe	Ventilation
10	 in LCD	Low voltage of battery	change battery

Transportation and Storage

1. The water meter should be stored in its original packaging, in an environment with an ambient temperature between -15°C and 70°C, and free from corrosive gases.
2. When storing the water meter on a shelf, the stacking height of the entire box should not exceed 6 layers.