ZPMETER

Tuya Smart Water Meter Solution

Catalogue

ZPMETER

Based on Tuya's global AI+IOT platform and intelligent solutions, it helps our water meters to quickly achieve intelligent upgrades. Smart water meters can be deployed globally, and the app can be easily controlled to realize metering, control and alarm in one. At the same time, it can be easily accessed to energy management PaaS systems for apartments, hotels, commercial lighting, etc., helping commercial customers to realize equipment control. Tuya provides multiple ways of flexible access, supporting both single device access to Tuya Cloud and access to Tuya Cloud through multiple sub-devices + gateway; providing diverse communication module access, such as NB, Wi-Fi, ZigBee, etc.; providing professional APP panel to achieve excellent user interaction experience. Smart Breaker can provide 4 segments of products and services, including cloud access, APP panel, cloud platform and scene PaaS

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Application Scenarios

Rental housing

Generally, farmers' houses or commercial houses are rented out to tenants, and they need to realize separate measurement of water consumption in independent rooms and public spaces, so as to realize reasonable cost sharing. Pain point 1: inconvenient to check water consumption Water meters are generally installed in a centralized area, and are independent in the water meter cabinet or cellar well area of the building, so it is not easy for tenants to check the water consumption. This solution supports viewing on the App. Pain point 2: No alarm for tampering behavior In order to prevent tenants from tampering with the water meter, the program supports the detection and alarming of abnormalities such as anti-tampering, magnetic influence, and abnormal water usage, and timely reporting. Pain point 3: prepayment function Support prepayment function, the tenant will take the initiative to care about the remaining water to recharge themselves, so that the landlord less worry.

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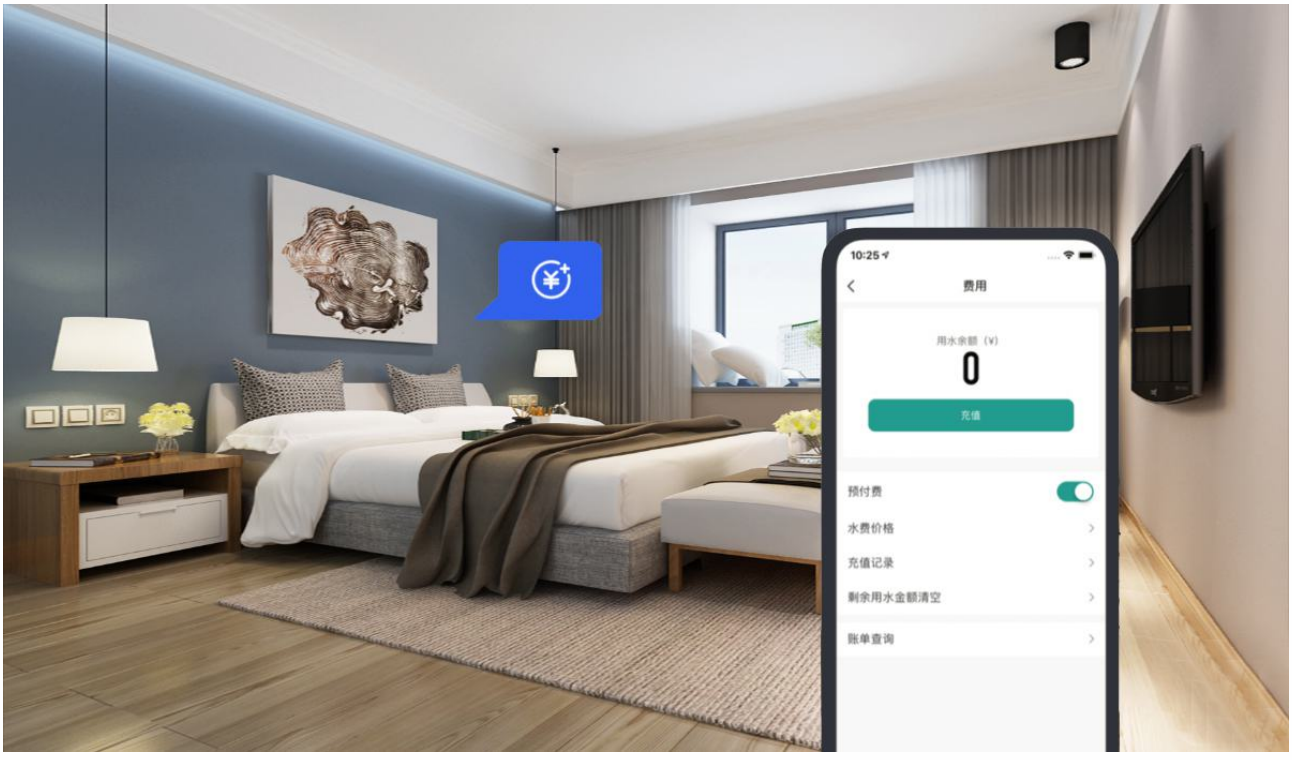
Apartments

Smart electricity and water meters are deployed independently based on the room dimension, and the apartment management can realize individual electricity and water consumption metering and charging management with periodic data update and remote monitoring. Tenants can view the energy consumption data through the APP panel and top up the fees through Alipay/WeChat channels. Pain point 1: High workload of manual meter reading. Manual meter reading is a big workload and the data is not timely. The smart meter has remote communication function, and the energy consumption data can be reported, counted and stored periodically for easy access. Pain point 2: Tenants default on utility bills. Tenants do not pay their bills in time for various reasons, thus affecting the operation of the property owner. The prepayment function of electricity and water meters allows tenants to recharge first before using them. Pain point 3: No alarm when abnormal events occur. When the valve can not be closed, long-term leakage of pipes and other abnormal events, the traditional water meter can not report the alarm in a timely manner. Smart water meter can report alarm information in a timely manner and push to the relevant parties in real time.



Industry and commerce

With a high water consumption base and large water consumption in industry and commerce, the installation of intelligent water meters can quickly realize the collection and comparison of water consumption data in the pipeline network, monitor the flow and pressure of pipeline operation, realize the optimal allocation of resources, save water and reduce emissions, and gradually optimize the water consumption per unit of GDP. Pain point 1: Large pipeline leakage and inconsistent data upstream and downstream of the pipeline. Through intelligent construction, high-frequency cycle data comparison can be realized, and leakage areas can be investigated online to quickly locate and solve problems and greatly reduce the leakage rate of pipeline networks. Pain point 2: meter reading and billing difficulties. Traditional water meter manual meter reading cycle is long and billing is difficult. Through the rapid combination of smart water meter and APP, the collection - billing information flow solves the question of user data accuracy and improves the water billing recovery rate Pain point 3: High water consumption per unit of GDP. Realize background data presentation and analysis, combined with water consumption scenarios can be customized water saving and emission reduction optimization program.

Function

Water quantity measurement

Smart water meter can realize high precision water consumption, water charges, pipeline pressure and other data measurement, based on visualized data, easily realize the water consumption measurement and pipe network quality view of this scene.

Data Display

The Doodle Cloud platform counts and stores water consumption data based on regular reports from smart water meters. Users can view hourly granularity of water consumption data for the last 7 days and daily water consumption data for the last year through the panel or PaaS system.

Remote control protection

Users can control the valve switch of smart water meter remotely through the panel or PaaS system. Especially some devices are deployed outdoors or in the countryside, users can easily achieve control at home with the app and the working status can be shown all together.

Threshold Alarms

The panel supports up to 13 kinds of abnormal alarms to help different plants achieve differentiated product functions. When an abnormality occurs, the water meter can take the initiative to report alarm information, and the APP receives the alarm and pushes it to the user actively to remind the user to deal with it in time. For some abnormal alarms, support whether the water meter action configuration.

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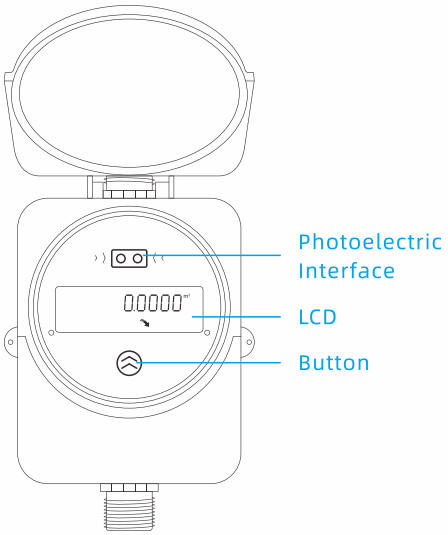
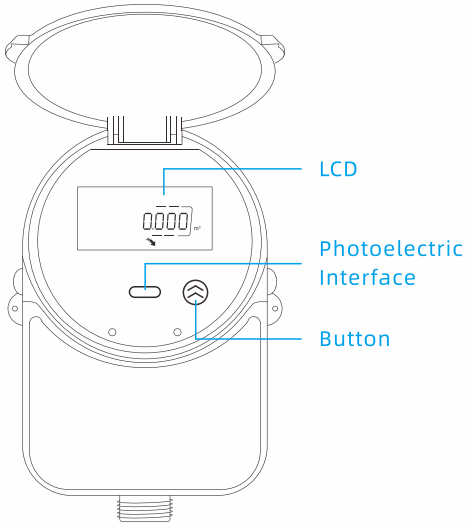
Product instruction



213E



214C

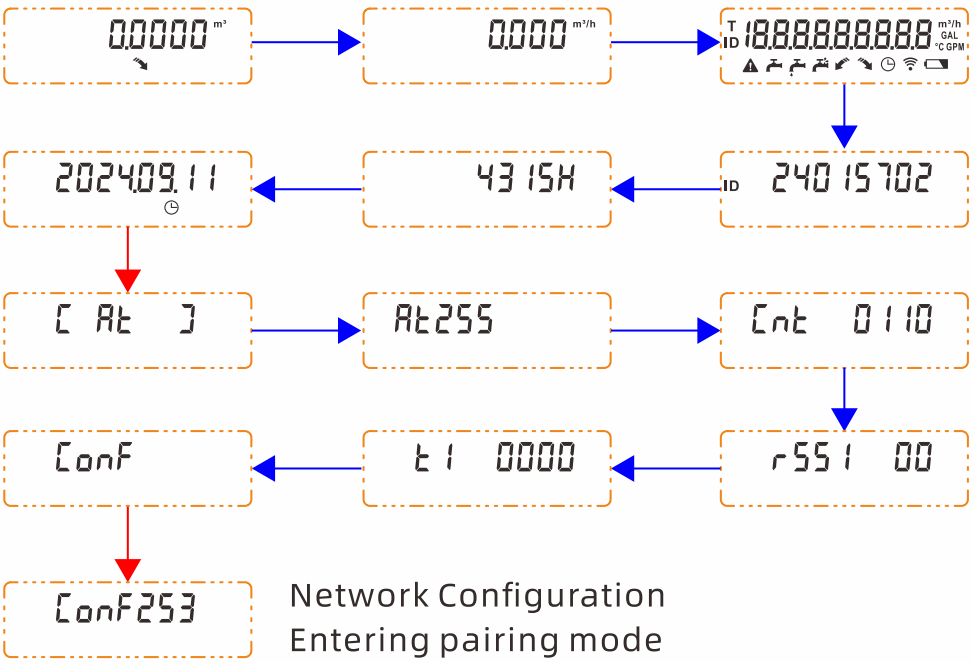
Pair to Tuya APP

Follow the steps below to enter pairing mode

5 seconds Long time press → Short press

Step 1:

① setup on 213E



Network Configuration
Entering pairing mode

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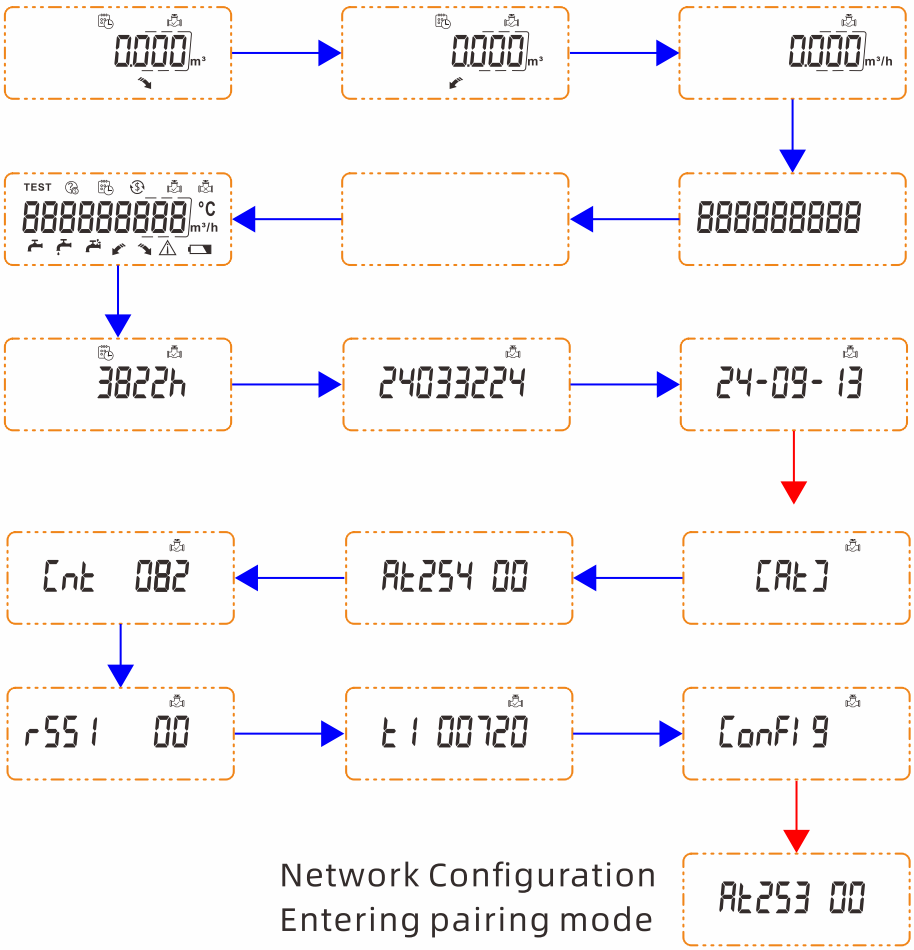
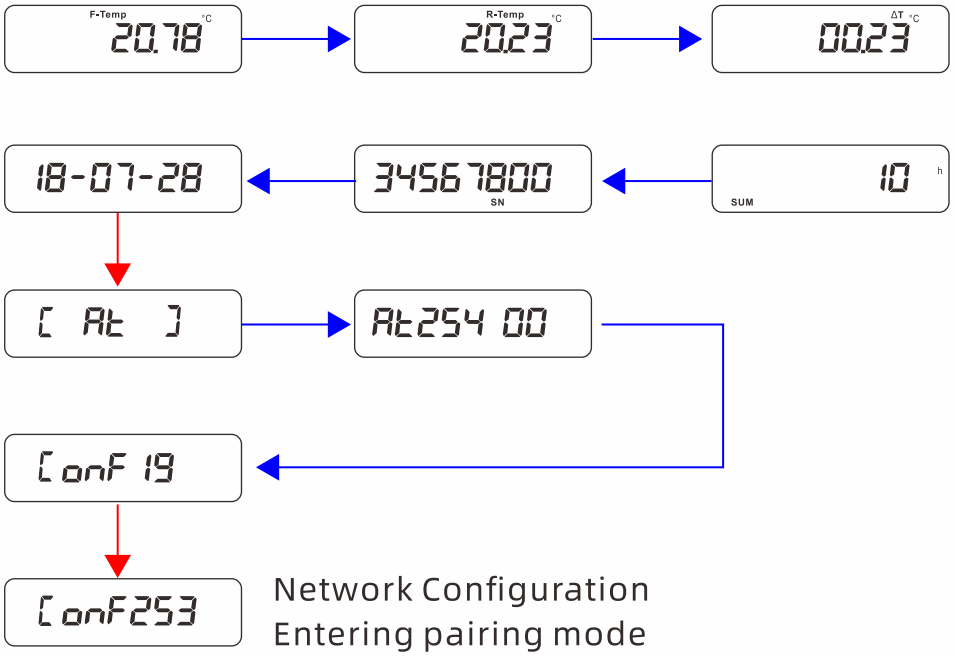
② setup on 214C



③ setup on 223F

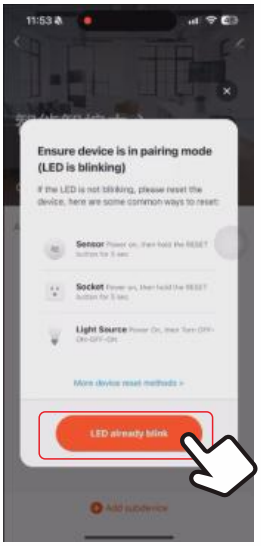


Network Configuration
Entering pairing mode

Step 2: Automatically search for devices in Tuya APP

> ⚠ Pairing mode requires a Tuya Zigbee gateway

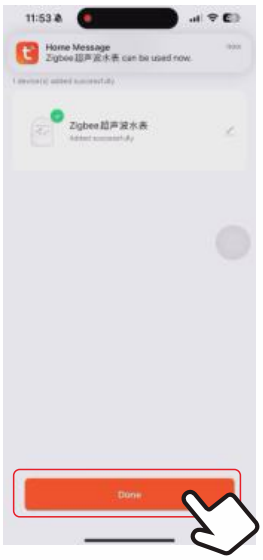
Go into Tuya Zigbee hub page, press the bottom button"+"



Click on "LED already blink"

Automated search

Click on "Next"



Click on "Done"

Adaptation meter model 1: 214C

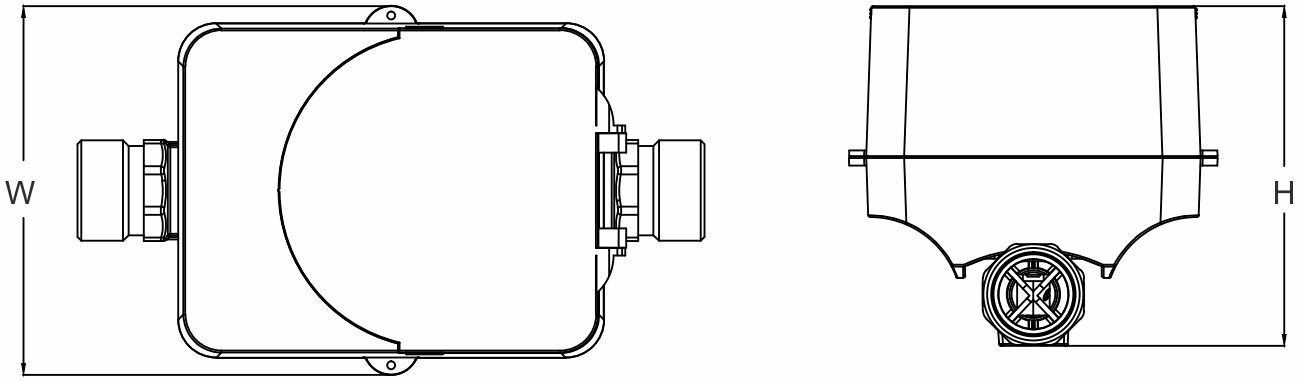
Technical parameters

Parameters		Performance
Nominal Diameter (mm)		DN15~DN20
Q3/Q1		250
Pressure Loss		Δp40
Measured media		Water, homogeneous liquid, and fill the measured pipe
Accuracy		Class 2
Maximum working pressure		1.0MPa
Working Environment		5℃ ~ +55℃ , ≤100%RH
Temperature		T30
Upstream flow field sensitivity level		U10
Downstream flow field sensitivity level		D5
Climatic and mechanical environmental class		Class B
Electromagnetic compatibility class		E1
Button		Touch Button + Hall button
Monitors		LCD 8-digit + prompt
Display content		Instantaneous flow rate (m³/h), cumulative flow rate (m³), screen detection, meter address, cumulative operating time (h), date (year/month/day), caliber, software version
Display Range		Cumulative flow : 0m³ ~ + 99999.999m³
Data Communication	Optical Interface	Baud rate 2400bps, even parity, 8 data bits, 1 stop bit
	Wireless Communication	ZIGBEE , Default 12-hour communication
Working power		Battery powered DC3.6V ; Two ER26500 batteries
Protection Class		IP67/ IP68
Storage temperature		-25℃ ~ +55℃

Flow parameters

Nominal	Permanent Flowrate Q3 (m³/h)	Boundary Flowrate Q2 (m³/h)	Minimum flow Q1 (m³/h)	Overload flow Q4 (m³/h)
Dn15	2.5	0.016	0.01	3.125
Dn20	4.0	0.025	0.016	5

Dimension



Diameter(mm)	DN15	DN20
Thread	G¾B	G1B
L(mm)	142	142
L1(mm)	165	195
H(mm)	98.2	98.2
W(mm)	102	102

Adaptation meter model 2: 213E

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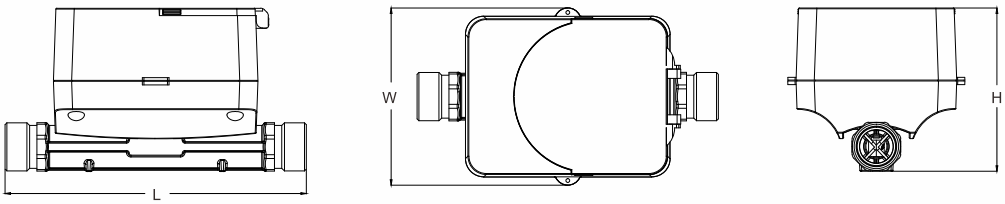
Technical parameters

Diameter	DN15	DN20	DN25	DN32	DN40
Length	165mm	190/195mm	225/260mm	180/260mm	200/300mm
$Q_3(m^3/h)$	2.5	4	6.3	10	16
Start Flow(L/h)	2	2	3	5	7
Meteorologic Class	Q_3/Q_1=100/125/160/200/250/400/500 ;				
Accuracy Class	Class 2				
Pressure Stage	MAP16	Pressure Loss		△p≤63	
Temperature	T30/T50/T70; Default T30				
Data Storage	730 daily data storage, 48 months history data; (Customization data storage mode according to customer requirements)				
Interface & Communication	Infrared/M-BUS/RS485/NB-IOT/LORAWAN/Pulse (Optional)				
Power	DC3.6V Lithium Battery				
Protection	IP68				
Temperature Requirements	Medium Temperature : 0.1°C ~ 90°C Ambient operating Temperature: 1°C ~ 70°C Ambient storage Temperature: -15°C ~ 70°C				
Installation	Horizontal or Vertical				
Durability	Life Period ≥ 6+1 years				

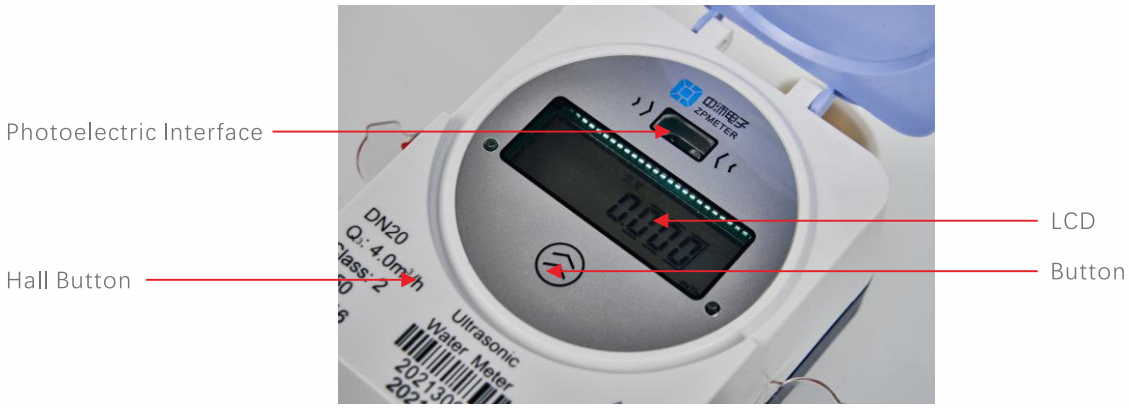
Dimension

Nominal Diameter	DN15	DN20	DN25	DN32	DN40
Thread	G3/4	G1	G1 1/4	G1 1/2	G2
L(mm)	116.5	116.5	116.5	116.5	116.5
L1(mm)	165	190/195	225/260	180/260	200/300
H(mm)	96.5	96.5	107	110	115
W(mm)	97	97	97	97	97

Appearance and shape



ZigBee Operating Instructions:



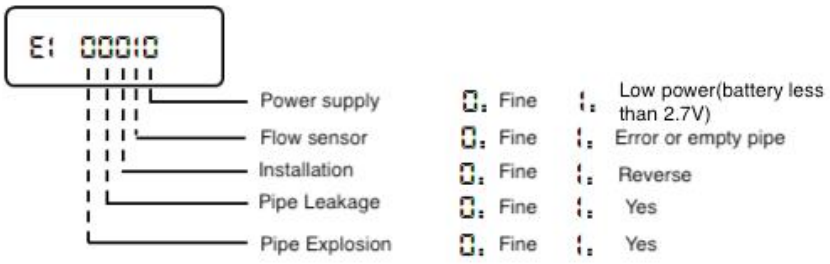
(1) The Hall button is only used to make the zigbee module enter the wiring mode by long press.
The specific operation is as follows: the magnet is close to the Hall button, so that its suction is greater than or equal to 4 seconds, can trigger the ZIGBEE module into the wiring mode. In order to judge whether the operation is successful to make the module enter the wiring mode, you can first touch the button to make the LCD switch to the reporting trigger interface, and then check whether the module enters the wiring mode by the LCD display through the magnet long suction and closure of the Hall button, and when the LCD display jumps to the following display, it means it successfully enters the wiring mode.

(2) Touch button: Use your finger to operate the touch button to switch between displays, view the relevant data measured by the meter and related parameters, and a long press on the specified interface will immediately trigger a data upload, as shown in the figure.

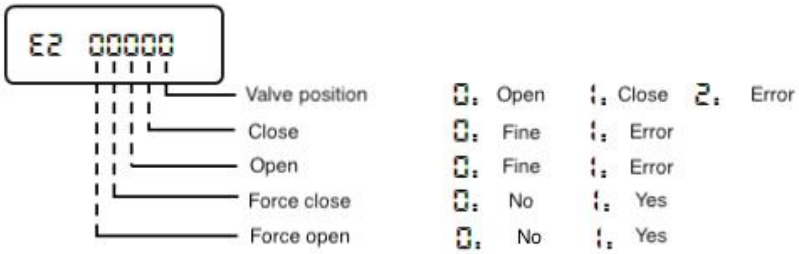
NB IoT communication operation instructions:

1. Enter the Toodle App to add the corresponding product, enter the IMEI number of the corresponding table, manually touch the table for one data upload, send out the NB signal to communicate with the platform, and after success, the table is added successfully.

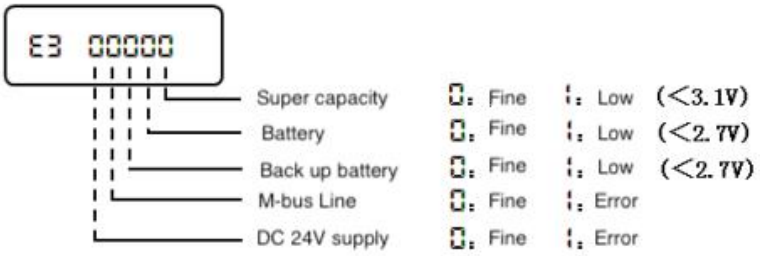
A. Meter alarm indicator



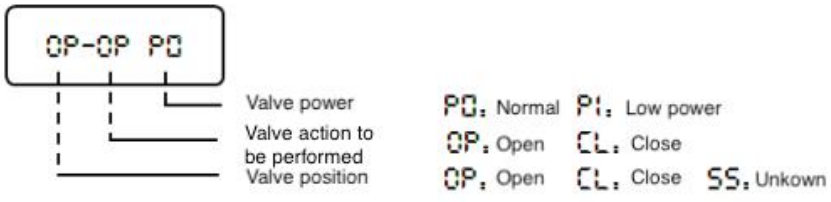
B. Valve alarm indicator



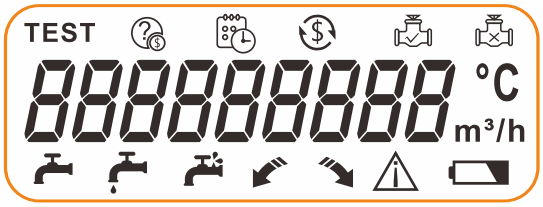
C. Power alarm indicator



D. Valve situation indicator



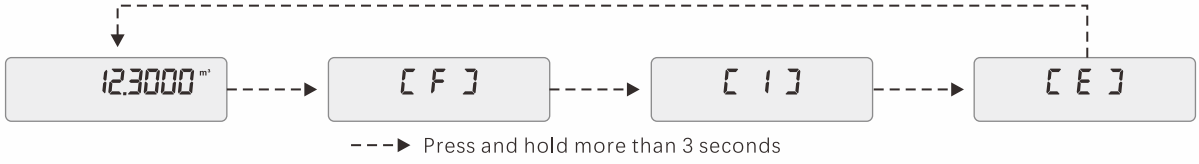
214C Display information:



No.	LCD Icons	Meaning
1		Normal water flow
2		Valve open
3		Pipe burst
4		Reverse water flow
5		Leakage
6		Reserved position
7		Alarm warning
8	TEST	Test Mode
9		Balance checking
10	m³/h	Cubic meter per hour
11		Cumulative working hours
12	°C	Water temperature
13		Low battery
14		Charging (prepaid mode)
15		Valve close
16		Full screen

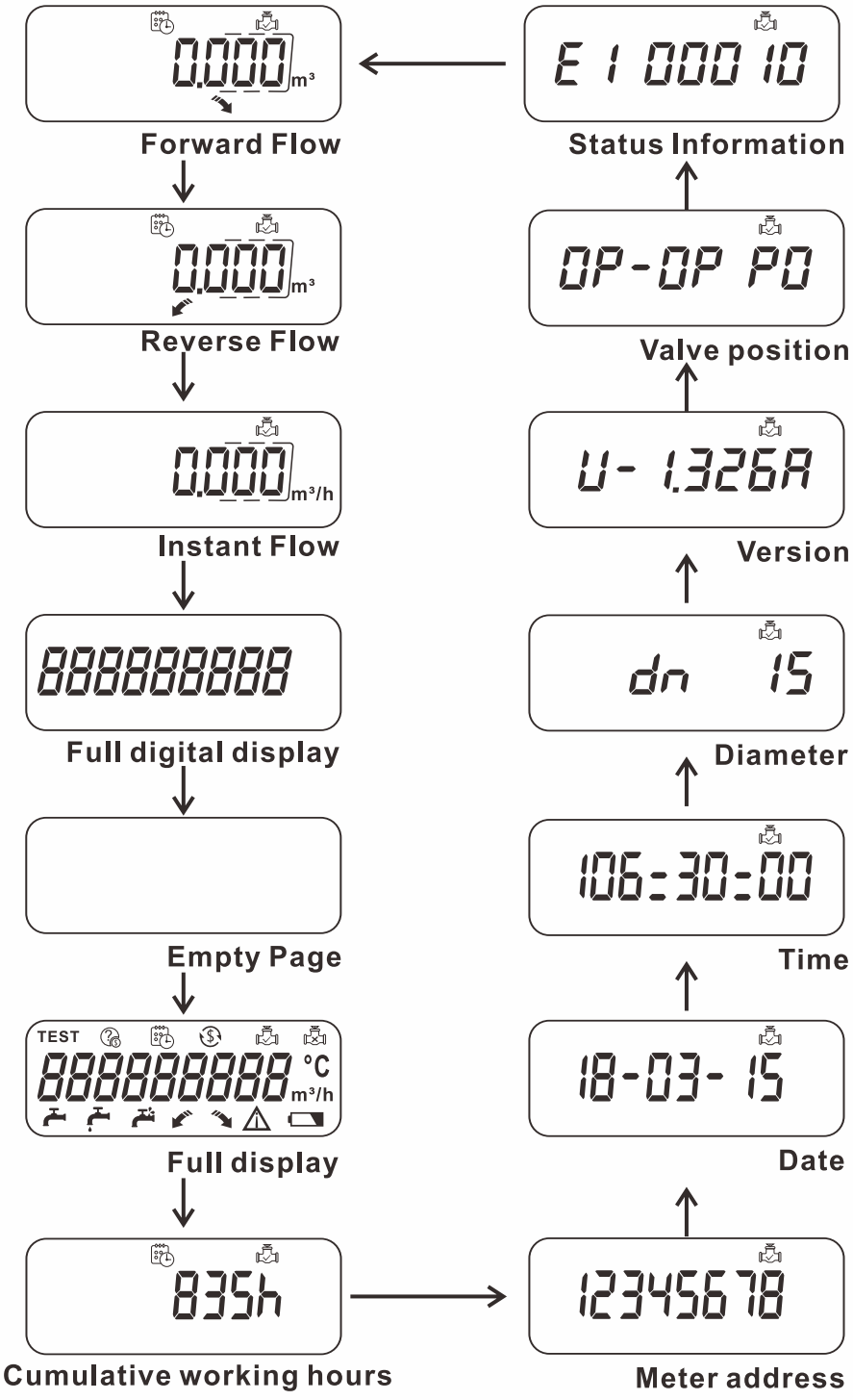
Menu List (User Loop)

Cover the button for 3 seconds and holding it on will bring up the four menus for users to select.

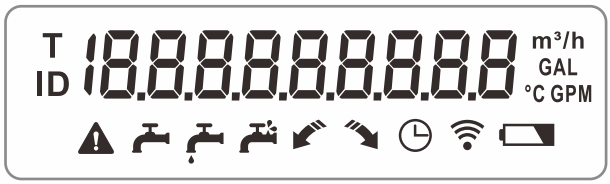


Main Menu

Shortly covering the button to display items under the Main Menu one by one in the following order to check the measurement data:



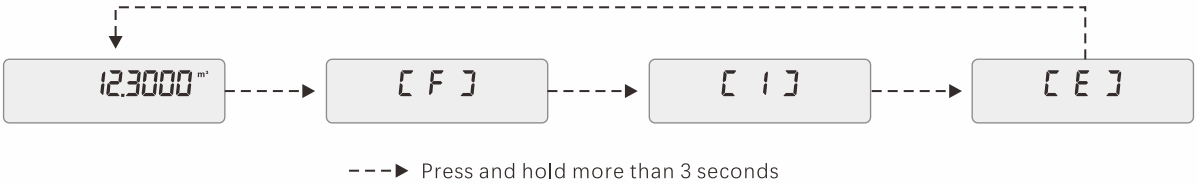
213E Display information:



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 temperature
15		Low battery
16	T	Reserved position
17		NB-Iot communicate normally
18		Full screen

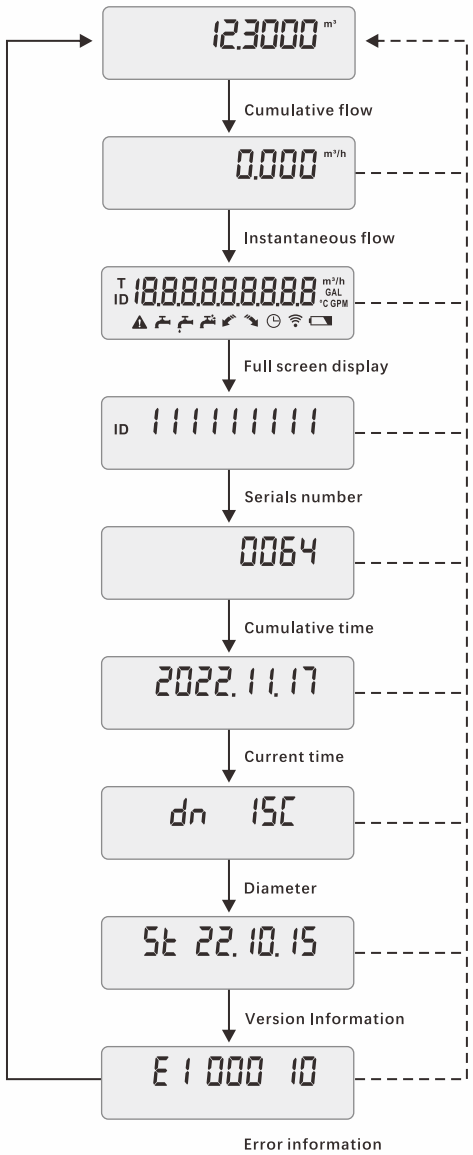
Menu List (User Loop)

Cover the button for 3 seconds and holding it on will bring up the four menus for users to select.



Main Menu

Shortly covering the button to display items under the Main Menu one by one in the following order to check the measurement data:

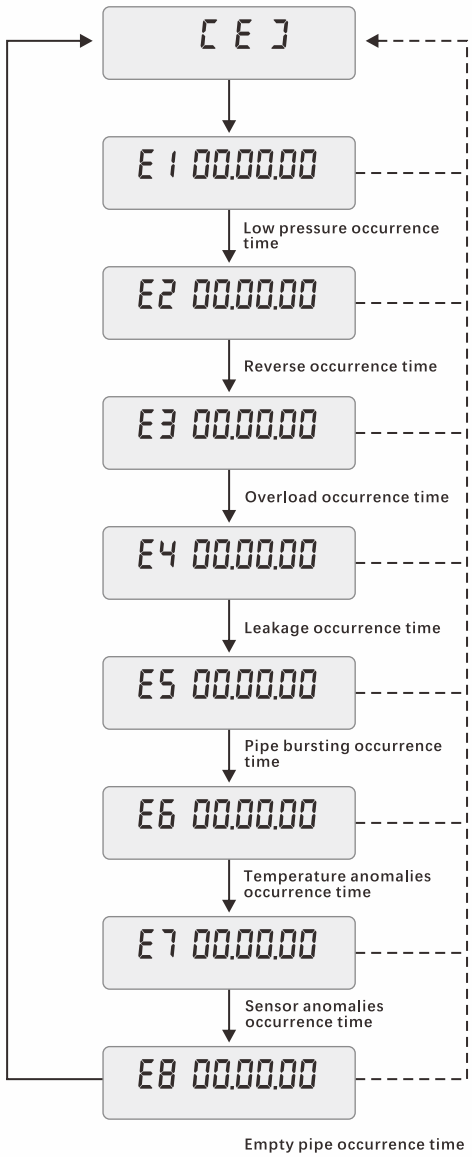


---► Press and hold for more than 3 seconds

——► Press and hold for less than 3 seconds

Menu E

Shortly covering the button to display items under Menu E one by one in the following order to check the meter information:



---► Press and hold for more than 3 seconds

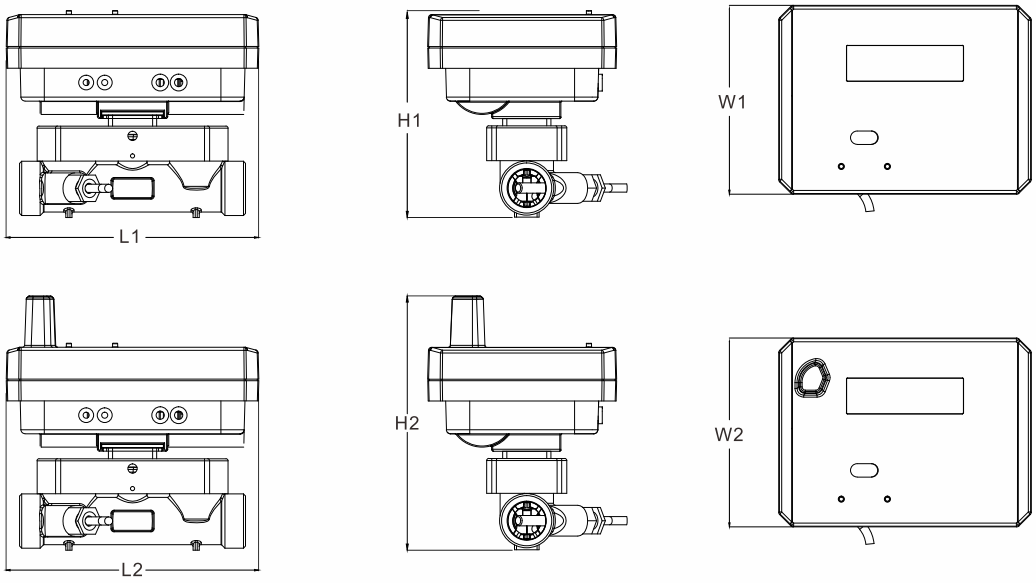
——► Press and hold for less than 3 seconds

Adaption model number 3: 223F

Meter parameter

Diameter	Min Flow	Permanent Flow	Max Flow	Length	Connection Thread
	$q_{min}(m^3/h)$	$qp(m^3/h)$	$q_{max}(m^3/h)$	mm	
Dn15	0.015	1.5	3	110	G3/4 B
DN20	0.025	2.5	5	130	G1B
DN25	0.035	3.5	7	160	G1 1/4 B
DN32	0.06	6	12	180	G1 3/4B
DN40	0.1	10	20	200	G2B
Measurement Accuracy	Class 2				
Connection	Threaded Connection				
Pressure Loss	⩽0.02MPa				
Maximum Working Pressure (MWP)	1.6MPa				
Flow Measuring Range	1:100				
Temperature Sensor	1.5m standard a pair of PT1000 Temperature Sensor (Length can be customized)				
Data Storage	Continuous store of 18 months record				
Power-off Protection	After power-off, meter could save all the record of before flow rate and the corresponding time, after power back, it recovery measure function automatically, and ensure the time continuation				
Communication mode	Wired: Mbus, RS485,Pulse, wireless: LoRa, (Communication is selected according to customer needs)				
Communication protocol	CJ/T188、EN1434、Modbus、Customer customization				
Power Supply	3.6VDC Lithium battery				
Protection Class	Ip67				
Environmental Class	Class A				
Temperature Range	(5 ~ 95) ℃				
Temperature Difference	(3~90)K				
Installation Way	Inlet or return water (default is inlet installation)				
Installation Position	Horizontal / Vertical				
Permanence	Service cycle≥6 years				
Display	8-bit LCD display				
Anti-magnetic Disturbance	When the intensity of magnetic field interference is not more than 100 ka/m, should not affect water meter measurement and remote transmission characteristics				

223F



Diameter	L1(mm)	L2(mm)	H1(mm)	H2(mm)	W(mm)
DN15	110	130	100	125	92
DN20	130	130	110	135	92
DN25	160	130	120	145	92
DN32	180	130	123	128	92
DN40	200	230	130	155	92

RS-485(Optional)

Cable: connected with four-core cable

Voltage: 5-24V

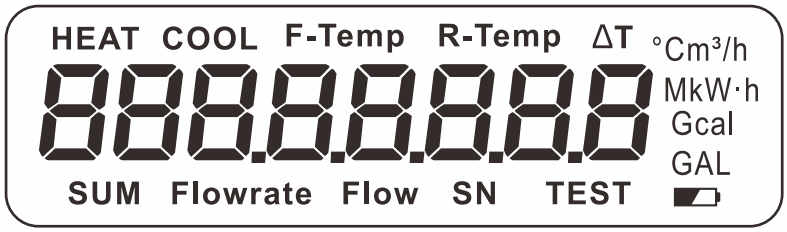
● LoRaWAN (Optional)

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 default		

● NB-IoT (Optional)

LTE Band	B3	B5	B8	B20	B28
Data transmission	Each 24h as default				

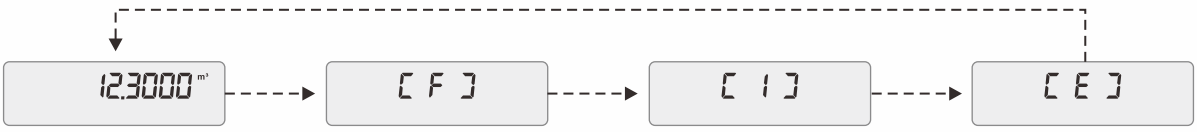
LCD/Menu Information



LCD Icons	Meaning
HEAT	Heat measure
COOL	Cool measure
F-Temp	Incoming water temperature
R-Temp	Return water temperature
ΔT	Temperature difference between income and return
°C m^3/h	Energy unit
MkW-h	Energy unit
Gcal	Energy unit
GAL	Energy unit
	Battery status
TEST	Test mode
SN	Serials number
Flow	Flow amount
Flowrate	Current flowrate
SUM	Sumary water amount

Menu List (User Loop)

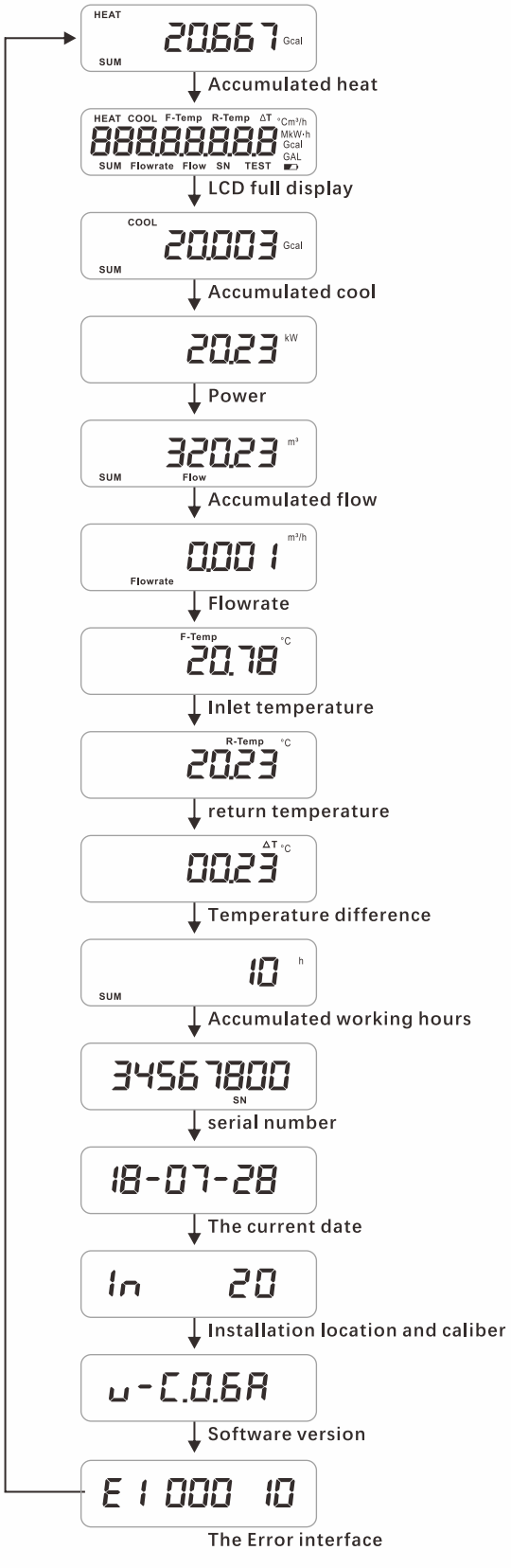
Cover the button for 3 seconds and holding it on will bring up the four menus for users to select.



---► Press and hold more than 3 seconds

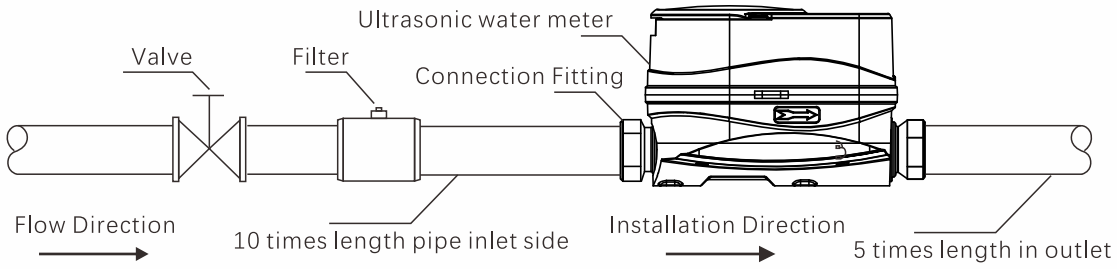
Main Menu

Shortly covering the button to display items under the Main Menu one by one in the following order to check the measurement data:

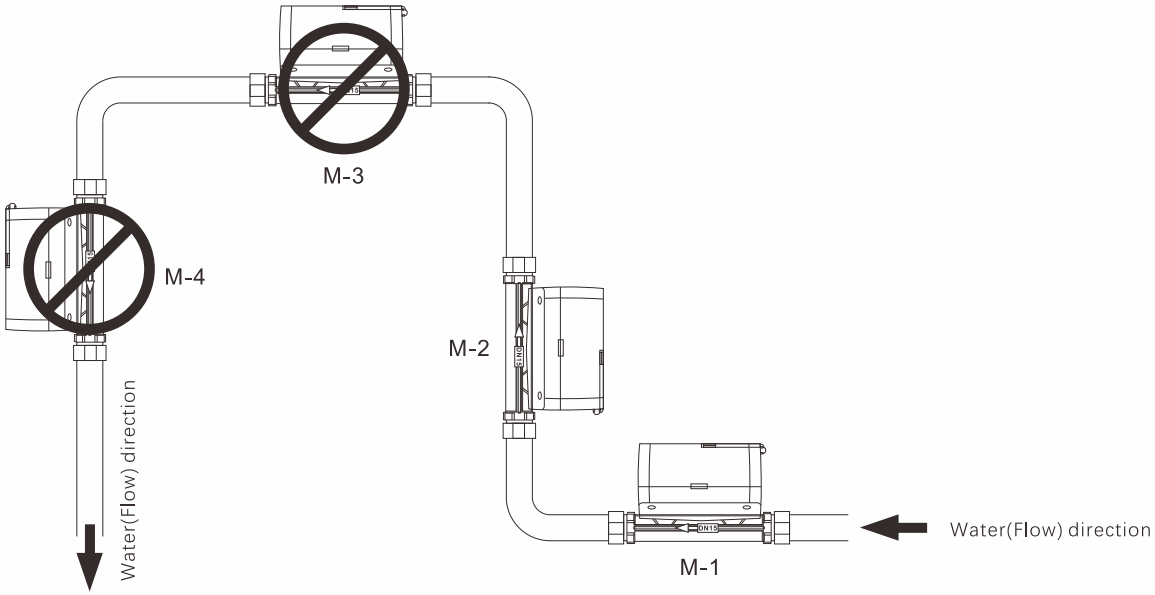


Installation conditions

1. The ultrasonic water meter is a precision measuring instrument, so it needs to be handled lightly.
2. When installing, make sure the arrow mark of the meter is consistent with the direction of water flow in the pipe before installation.
3. There should be enough space for maintenance during installation.
4. In order to ensure the accuracy of measurement, at least 10 times the length of straight pipe should be reserved in front of the meter and at least 5 times the length of straight pipe should be reserved after the meter, as shown in the figure below



Requirements for installation location



- The installation shown in M-1 is correct, the meter is mounted low in the pipe, there is back pressure at the back end of the meter, and no air bubbles are generated that would affect the accuracy of the measurement, this is a horizontal installation.
- The installation shown in M-2 is correct, and this mounting position also does not generate air bubbles for the same reason as A. This figure shows a vertical installation.
- The installation shown in M-3 is incorrect, as the meter is mounted high in the pipe, where air bubbles tend to accumulate and affect measurement accuracy.
- The installation shown in M-4 is incorrect. This installation is a vertical installation with a downward water inlet, which is not allowed.

Notes for installation and use

1. Please flush the pipe before installation to prevent stones and other debris in the pipe, which will affect the use of the water meter.
2. Straight pipe sections should be installed before and after the meter to ensure the requirements of U10/D5.
3. For harsh water environment, install a filter or check valve before the meter.
4. The fluid in the pipe should be free from air bubbles.
5. The wireless water meter should be installed in a place with good signal, and the environment with weak wireless signal should be equipped with external antenna (such as manhole, pipe well).
6. The meter should be far away from AC power and high-frequency radiation source at least 2m above, to avoid electromagnetic influence on the measurement.
7. The meter should be away from high temperature radiation sources and avoid direct sunlight.
8. Avoid pulling the antenna during installation and use to prevent the antenna from being damaged and affecting the communication.
9. Please do not test pressure greater than 1.6MPa to ensure that the flow is within the flow range of the meter.
10. Installation must be in the direction of the flow indication arrow on the pipe section, and take horizontal and vertical installation.
11. When installing outdoor pipes, please do a good job of pipe and water meter insulation to prevent freezing and cracking in winter.
12. The meter should be installed in a dry environment as much as possible.

Issues and solutions

No.	Behavior	Reason	Solution
1	No display	PCB is broken	Change meter
2		Water in PCB	Change meter
3		Power used out	Change battery
4	High instantaneous flow	Wrong install direction	Adjust installation
5		Bubble in pipe	Ventilation
6	Not go at all times	Bubble in pipe	Ventilation
7	No instantaneous flow	Valve is closed	Open valve
8		Transducer is broken	Change meter
9		Bubble in pipe	Ventilation
10	in LCD	Low voltage of battery	Change battery

Transportation and Storage

1.The water meter should be stored in the original package at an ambient temperature of -15℃~70℃ and without corrosive gases in the air.

2. When the water meter is stored on the shelf, the height of stacking the whole box should not exceed 6 layers.

Service Commitment

ZP meter is committed to providing users with timely and high-quality after-sales service, sincerely promise the following.

1. The instrument is free of charge within 12 months from the date of sale, without charging the cost of work and original parts.
2. Beyond the free warranty period to the site maintenance, only the maintenance travel and original cost charges.
3. The following conditions are not covered by the free warranty, only the basic charges such as labor and cost or the cost price will be charged for replacement.

- Damage to the product caused by human factors on your part.
- Non-instrument failure due to system shutdown, external abnormalities, failure to operate according to instructions, etc.
- Damage to the meter due to irresistible causes, such as lightning strikes, etc.