HGHWELL
汉威电子

PRODUCT CATALOG

Water,Heat,Gas and Electricity Smart Metering Solutions Provider

Anhui Highwell Electronic Co., Ltd.

Anhui Highwell Electronic Co., Ltd.

High-tech Zone, Hefei City, Anhui Province, China

+86-0551-65301309

+86-0551-65333323

www.ahhwdz.com/en

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Leading Manufacturer

Of Meters and Digital Solution

For

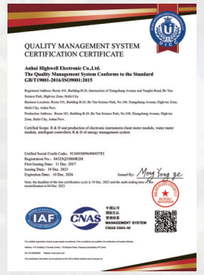
Remote Reading

Our Company

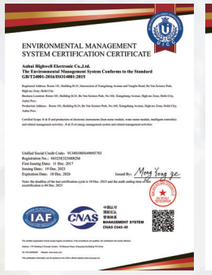
Highwell is a Chinese company founded in 2010, with over 15 years of experience in designing, manufacturing, and distributing instruments and solutions for measuring water and energy consumption. Our annual production now exceeds 5 million units, placing us among the leaders in the national market. We operate both nationally and internationally, serving water utilities, industrial clients, and the private sector.

Our product portfolio is comprehensive, including digital and ultrasonic smart water meters, single-jet and multi-jet water meters with mechanical or magnetic transmission, flow meters, thermal energy meters, and cloud platforms. These products are available with direct reading capabilities or integrated modules for remote data transmission. By offering fully integrated solutions for water and heat metering—with all products designed, engineered, and manufactured in-house—we ensure high-quality, reliable solutions at competitive prices.

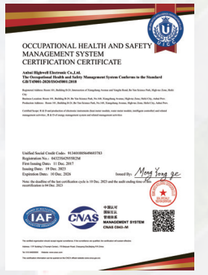
At Highwell, we are passionate about embedded and intelligent metering technologies. Every day, our dedicated team of engineers and experts brings both expertise and commitment to delivering the solutions our customers need to address water and energy challenges. We aim to lead by example—creating value not only through our innovative technologies, but also by engaging with our customers' real-world problems and driving positive change where our impact can be greatest.


QUALITY MANAGEMENT SYSTEM
CERTIFICATION CERTIFICATE

Anhui Highwell Electronic Co.,Ltd.
The Quality Management System Conforms to the Standard
GB/T19001-2016/ISO9001:2015


ENVIRONMENTAL MANAGEMENT
SYSTEM CERTIFICATION CERTIFICATE

Anhui Highwell Electronic Co.,Ltd.
The Environmental Management System Conforms to the Standard
GB/T24001-2016/ISO14001:2015


OCCUPATIONAL HEALTH AND SAFETY
MANAGEMENT SYSTEM
CERTIFICATION CERTIFICATE

Anhui Highwell Electronic Co.,Ltd.
The Occupational Health and Safety Management System Conforms to the Standard
GB/T45001-2020/ISO45001:2018

System Architecture

Highwell metering product application system comprises a data acquisition layer, a data transmission layer, and a data management layer. The data acquisition layer is composed of various intelligent terminal devices such as instruments and sensors, collecting information such as flow, heat, electricity, temperature, pressure, and water quality. The data transmission layer utilizes advanced low-power IoT technology, allowing each terminal device to access the network and transmit collected data to the data management layer. The data management layer, composed of servers, system platforms, and user terminals, stores, analyzes, and applies the acquired data. This multi-level system architecture ensures comprehensive coverage of metering products for water supply, heat supply, and other areas.

Terminal Equipment


Multi-Jet Water Meter With Smart Module


Ultrasonic Water Meter


Ultrasonic Heat Meter


Intelligent Valve

Indoor T+H Sensor


Intelligent Acquisition Terminal


Electric Meter


Pressure Sensor


Flowmeter


Water Quality Analyzer

Products

Ultrasonic Water Meter

UM-1

- Nominal Diameter: DN15/DN20
- Q3/Q1: R250/R400/R800
- 10 years of battery life

NB-IoT Cat1 LoRa LoRaWAN RS 485 M-Bus M-Bus

* Possibility of Built-in Valve

Accuracy
UM-1 is a residential water meter based on the latest ultrasonic technology. Its start flow down to 2 L/hour and dynamic range up to R800.

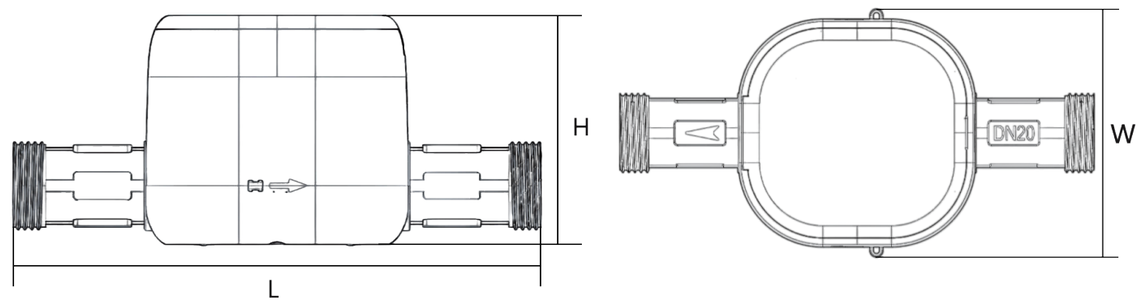
Remote Reading
Comes with integrated communication that allows for safe and easy remote reading via either cable or network. The flexible connectivity options include NB-IoT,Cat1,LoRa, LoRaWAN,RS485,M-Bus,M-Bus wireless.

Battery Lifetime
Powered from a lithium battery. Depending on use and setup, the lifetime is up to 10 years.

Data Package
UM-1 offers a variety of data packages to transmit to your utility. Choose the right data package to suit your needs when ordering the meter and reconfigure it at a later point in time if needs change.

Price-friendly
Our vertically integrated, in-house manufacturing enables us to offer significant price advantages without compromising quality. We also provide flexible OEM and ODM services to meet your specific product requirements.

Dimension



Nominal Diameter	Length L (mm)	Width W (mm)	Height H (mm)	Thread Diameter D
DN15	165	101	84	G3/4"B
DN20	195	101	84	G1"B

Technical Data

Nominal Diameter	DN	mm	15	20
		inch	1/2"	3/4"
Starting Flow	Q_S	m^3/h	0.0024	0.004
Permanent Flow rate	Q_3	m^3/h	2.5	4
Attainable measuring range	Q_3/Q_1	R	800	800
Standard Measuring Range	Q_3/Q_1	R	250	250
Temperature Range	-	°C	0.1 - 50	0.1 - 50
Operating Pressure	MAP	bar	0.3 - 16	0.3 - 16
Pressure Loss Class at Q_3	△p	bar	0.25	0.25
Mechanical Ambient Conditions	-	-	M2	M2
Electromagnetic Ambient Condition	-	-	E1	E1
Climatic Ambient Conditions	-	°C	5 - 55	5 - 55
Flow Profile Sensitivity	-	-	U10/D5	U10/D5
Protection Class (Flood-proof)	-	-	IP68	IP68
Battery Life	-	year	10	10

Ultrasonic Bulk Water Meter

BUM1200

- Nominal Diameter: DN50～DN600
- Q3/Q1: R250/R400
- 10 years of battery life

NB-IoT Cat1 LoRa LoRaWAN RS 485 M-Bus M-Bus wireless

* Possibility of Built-in Valve

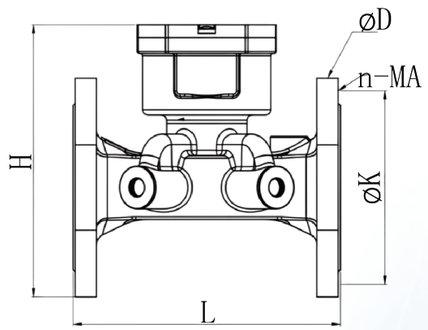
High accuracy, unaffected by sand, suspended solids or air pockets.

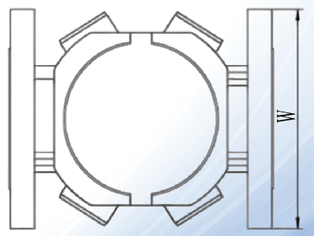
Non-moving parts permit reliable performance, long service life and low pressure loss.

Long battery life up to 10years.

AMR ready for wireless, or RS485/M-Bus and other wired communication modes.

The flexible connectivity options include NB-IoT,Cat1,LoRa,LoRaWAN ,RS485,M-Bus,M-Bus wireless.





Dimension

Nominal Diameter	Length L (mm)	Thread Diameter D (mm)	Height H (mm)	Flange Hole
DN50	200	165	228	4-M16
DN65	200	185	245	4-M16
DN80	225	200	261	8-M16
DN100	250	220	270	8-M16
DN125	250	250	293	8-M16
DN150	300	285	308	8-M20
DN200	350	340	343	12-M20
DN250	450	405	493.5	12-M24
DN300	500	460	547.5	12-M24

Technical Data

Nominal Diameter	DN	mm	50	65	80	100	125	150	200	250	300
		inch	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
Starting Flow	Qs	m³/h	0.04	0.064	0.102	0.16	0.24	0.4	0.64	1.02	1.6
Permanent Flow Rate	Q3	m³/h	40	63	100	160	250	400	630	1000	1600
Attainable Measuring Range	Q3/Q1	R	400	400	400	400	400	400	400	400	400
Standard Measuring Range	Q3/Q1	R	250	250	250	250	250	250	250	250	250
Pressure Loss Class at Q3	△p	bar	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Temperature Range	-	°C	0.1 - 50								
Operating Pressure	MAP	bar	0.3 - 16								
Mechanical Ambient Conditions	-	-	M2								
Electromagnetic Ambient Condition	-	-	E1								
Climatic Ambient Conditions	-	°C	5 - 55								
Flow Profile Sensitivity	-	-	U10/D5								
Protection Class (Flood-proof)	-	-	IP68								
Battery Life	-	year	10								

Single-jet Water Meter With Smart Module

SJ-1

SJ-1 is a Single-Jet Dry Type With Non-magnetic Transmission Water Meter, through mechanical and electrical conversion of Non-magnetic counting function, transfer the data via network.The individual advantage is compact design. With its very small height, the meter easily adapts to any installation situation.

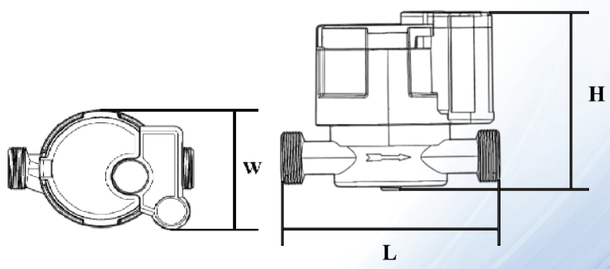
LoRaWAN RS 485 M-Bus

Features

- Dry-type structure
- Metrological class up to R160
- Precise sampling up to 0.008m³
- Optional communication ports
- Battery life 10 years
- Supports forward and reverse metering
- Low power consumption
- Support OTA remote upgrade
- Support Multi-Alarm Alert
- Brass body

Dimension

Size	DN15	DN20
L(mm)	110	130
H(mm)	90	90
W(mm)	87	87



Technical Data

DN	mm	DN15	DN20
R	Q_3/Q_1	R100/R160	
Q_4 Overload Flow	m^3/h	3.125	5
Q_3 Permanent Flow	m^3/h	2.5	4
Q_2 Transitional Flow	m^3/h	0.025	0.04
Q_1 Minimum Flow	m^3/h	0.015625	0.025
Connection		G3/4"B	G1"B
Flow Sensor Type		Single-jet, dry	
Flow Sensor Material		Brass	
Temperature Class		T30/T50/T90	
Pressure Loss		△P63	
Flow Profile Sensitivity		U10/D5	
Operating Pressure		16 bar	
Accuracy Class		2	
Environment Class		B	
Electromagnetic Ambient Condition		E1	
Installation Direction		Horizonta/Vertical	
Power Supply		DC3.6V, Lithium Battery	
Meter Life		10 years	
Ambient Temp		5°C～55°C	
Storage Temp		-20°C～60°C	

Multi-Jet Water Meter With Smart Module

WM100

- Nominal Diameter: DN15～DN40
- Q3/Q1: R80
- With Valve / Without Valve

NB-IoT Cat1 LoRa LoRaWAN RS 485 M-Bus M-Bus wireless

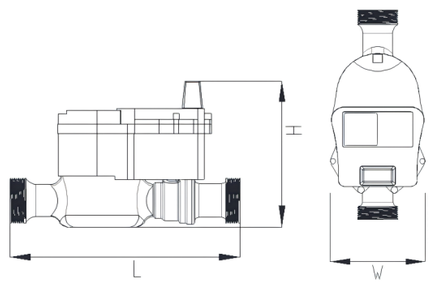
WM100 is a multi-jet water meter that uses an inductive target (nonmagnetic) to transfer the data of measurement via the cable or network to the smart metering management system.

Meter Sizes

Performance	Parameters						
Nominal Diameter	Q3/Q1	Minimum flow rate Q1 (L/h)	Transition flow rate Q2 (L/h)	Permanent flow rate Q3 (L/h)	Overload flow rate Q4 (L/h)	Minimum Reading(L)	Maximum Reading(L)
DN15	R80	31	50	2500	3125	0.05	99999
DN20	R80	50	80	4000	5000	0.05	99999
DN25	R80	79	126	6300	7875	0.05	99999
DN32	R80	125	200	10000	12500	0.05	99999
DN40	R80	200	320	16000	20000	0.05	99999

Dimension

Nominal Diameter	Length L (mm)	Width W (mm)	Height H (mm)	Thread Diameter D
DN15	165	96	115	G3/4"B
DN20	195	96	115	G1"B
DN25	225	96	115	G1 1/4"B



Features

- The transmission module and base meter is separately installed, easily exchanged. The power supply battery is independently packaged and is convenient to replace.
- Use the latest data transmission technology, The flexible connectivity options include NB-IoT ,Cat1,LoRa,LoRaWAN,RS485,M-Bus,M-Bus wireless.
- The transmission position is 1L.
- The base meter adopts the independent function pointer, after installing the electronic module, it doesn't affect any reading.
- ER26500+SPC1520 power combination technology,the lifetime is up to 8 years.

Technical Data

Power Supply	3.6V (non-rechargeable lithium battery)
Accuracy Class	2
Q3/Q1	R80
Nominal Diameter	DN15～DN40
Operating Pressure	16 bar
Environment Class	B
Temperature Class	T30/T50
Flow Profile Sensitivity	U10/D5
Electromagnetic Ambient Condition	E1
Communication Interface	RS485/M-Bus/Infrared/NB-IoT/LoRa/Cat1/TTL/LoRaWAN(optional)
Protection Class	IP68

Multi-jet Keypad Prepayment Water Meter

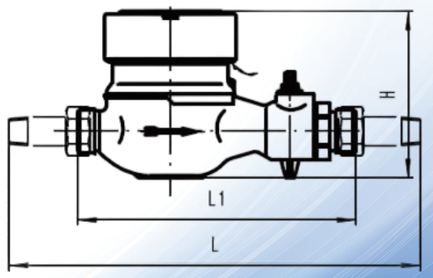
GSW7666 is a prepayment water meter thatcomplies with STS standard and has multiplenozzles. It is an ideal residential water meter forrevenue protection & customers management ofwater utilities. With low consumption, the metersupports gradient charging and offers multiplecaliber sizes (optional), making it a cost-effectivemetering device.

Features

- IP67 waterproof
- Data storage of 10 years
- Magnetic field protection
- Optional brass/plastic meter body
- Suitable for cold water below 50 °C
- Pre-programmable low-credit warning
- Flexible setting of tariff & debt collection
- Wet/dry dial (optional)register construction
- Recharging byinputting 20-digit token with keypad

Dimension

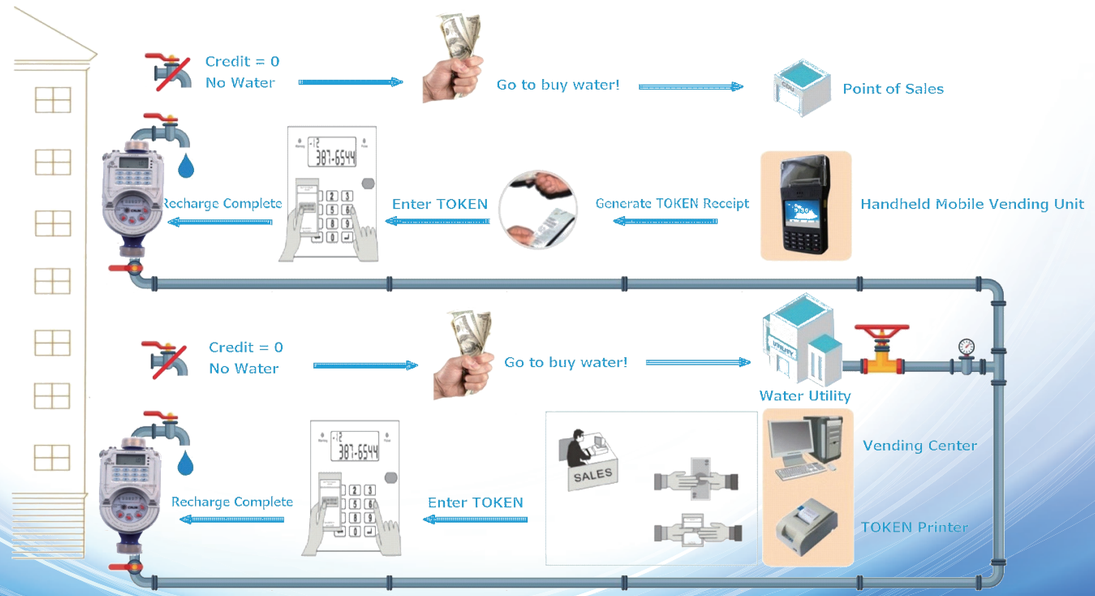
Nominal Diameter	Length L (mm)	Width W (mm)	Height H (mm)	Thread Diameter D
DN15(1/2”)	165/190	99	104	G3/4"B
DN20(3/4”)	190	99	106	G1"B
DN25(1”)	225/260	103	114	G1 1/4"B
DN32(1-1/4”)	230/260	104	117	G1 1/2"B
DN40(1-1/2”)	245/300	124	147	G2"B
DN50(2”)	280/300	125	172	G2 1/2"B



Technical Data

DN		mm	15	20	25	32	40	50
Size		Inch	1/2”	3/4”	1”	1-1/4”	1-1/2”	2”
Q_4 Overload Flow		m^3/h	3.125	5	7.875	12.5	20	31.25
Q_3 Permanent Flow		m^3/h	2.5	4	6.3	10	16	25
R80 (Q_3/Q_1)	Q_2	m^3/h	0.05	0.08	0.126	0.2	0.32	0.5
	Q_1	m^3/h	0.031	0.05	0.079	0.125	0.2	0.312
R100 (Q_3/Q_1)	Q_2	m^3/h	0.04	0.064	0.1	0.16	0.256	0.4
	Q_1	m^3/h	0.025	0.04	0.063	0.1	0.16	0.25
R125 (Q_3/Q_1)	Q_2	m^3/h	0.032	0.051	0.081	0.128	0.2	0.32
	Q_1	m^3/h	0.02	0.032	0.05	0.08	0.128	0.2
Operating Pressure		Bar	16					
Pressure Loss			0.63 (as complete unit)					
Max Temperature		°C	50					
Max Reading		m^3	9999					
Max Permissible Error(MPE)		%	Q1≤Q≤Q2: MPE=±5% Q2≤Q≤Q4: MPE=±2%					

Water Vending Process



Woltman Bulk Water Meter

BWM1200

- Nominal Diameter: DN50～DN300
- Q3/Q1: R80
- With Valve / Without Valve

NB-IoT Cat1 LoRa LoRaWAN RS485 M-Bus M-Bus wireless

BWM1200 is the smart water meter based on woltman /tangencial dry type water meter, the meter reading is transferred via pulse output cable and connect with smart module for wireless remote reading.

Features

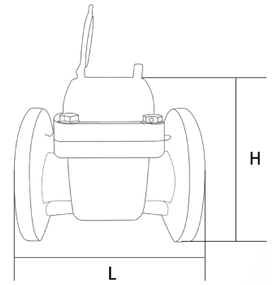
- The transmission module and base meter is separately installed, easily exchanged. The power supply battery of the woltman bulk water meter is independently packaged and is convenient to replace.
- Use the latest data transmission technology, The flexible connectivity options include NB-IoT,Cat1 LoRa,LoRaWAN,RS485,M-Bus,M-Bus wireless.
- The transmission position is 1L.
- The base meter adopt the independent function pointer, after installing the electronic module, it doesn't affect any reading.
- The lifetime is up to 10 years.

Meter Sizes

Performance	Parameters						
Nominal Diameter	Q3/Q1	Minimum flow rate Q1 (m³/h)	Transition flow rate Q2 (m³/h)	Permanent flow rate Q3 (m³/h)	Overload flow rate Q4 (m³/h)	Minimum Reading(m³)	Maximum Reading(m³)
DN50	R80	0.5	0.8	40	50	0.0005	999999.999
DN65	R80	0.5	0.8	40	50	0.0005	999999.999
DN80	R80	0.7875	1.26	63	78.75	0.001	999999.999
DN100	R80	1.25	2	100	125	0.001	999999.999
DN125	R80	2	3.2	160	200	0.001	999999.999
DN150	R80	3.125	5	250	312.5	0.001	999999.999
DN200	R80	5	8	400	500	0.001	999999.999
DN250	R80	7.875	12.6	630	787.5	0.01	999999.999
DN300	R80	12.5	20	1000	12500	0.01	999999.999

Dimension

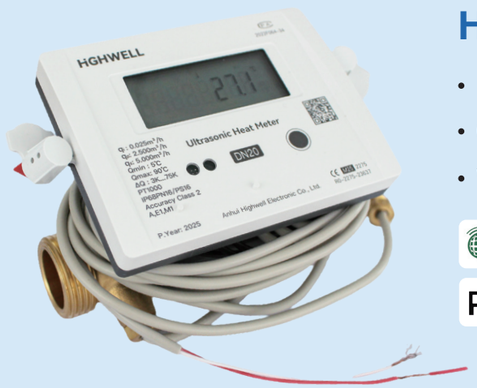
Nominal Diameter	Length L (mm)	Height H (mm)	Flange Diameter	Bolt Circle Diameter	Flange Hole
DN50	200	209.5	165	125	4-M16
DN65	200	219.5	185	145	4-M16
DN80	225	278.8	200	160	8-M16
DN100	250	288.8	220	180	8-M16
DN125	250	298.8	250	210	8-M16
DN150	300	318.8	285	240	8-M20
DN200	350	345.8	340	295	8-M20(1.0MPa) 12-M20(1.6MPa)
DN250	450	452.3	395(1.0MPa) 405(1.6MPa)	350(1.0MPa) 355(1.6MPa)	12-M20(1.0MPa) 12-M24(1.6MPa)
DN300	500	479.8	445(1.0MPa) 460(1.6MPa)	400(1.0MPa) 410(1.6MPa)	12-M20(1.0MPa) 12-M24(1.6MPa)



Technical Data

Type	Woltman
Body Material	Ductile Iron
Accuracy Class	2
Q3/Q1	R80
Communication Port	Pulse/NB-IoT/LoRa/LoRaWAN/M-Bus/RS485
Installation Mode	Horizontal Installation
Temperature Class	T30/T50
Pressure Rating	MAP16
Electromagnetic Ambient Condition	E1
Protection Class	IP68
Battery Life	10 years

Ultrasonic Heat Meter



HM-1

- Nominal Diameter: DN15～DN40
- Q3/Q1: R50/R100
- With Valve / Without Valve

NB-IoT Cat1 LoRa LoRaWAN RS 485 M-Bus M-Bus wireless

HM-1 is a compact ultrasonic meter for measuring energy consumption in heating and combined heating applications designed primarily for use in residential buildings.

Accuracy
The heat meter has an approved dynamic range of 100:1 (qp:qi), and a meter program with nominal flow from qp 1.5 to 10 m³/h. This gives you the advantage of being able to measure every thinkable consumption, and in turn you can benefit from a reduced loss of distributed energy.

Temperature Range
The wide temperature range enables the utilisation throughout the distribution network, giving you the benefit of only having to operate and maintain one type of meter regardless of if it is placed in a substation, light industrial application, or in a private residence.

Remote reading
Comes with integrated communication that allows for safe and easy remote reading via either cable or network. The flexible connectivity options include NB-IoT,Cat1,LoRa, LoRaWAN,RS485, M-Bus,M-Bus wireless.

Battery lifetime
Powered from a lithium battery. Depending on use and setup, the lifetime is up to 10 years.

Data Package
HM-1 offers a variety of data packages to transmit to your utility. Choose the right data package to suit your needs when ordering the meter and reconfigure it at a later point in time if needs change.

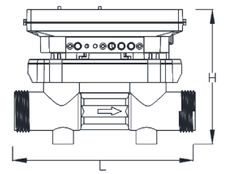
Price-friendly
Our vertically integrated, in-house manufacturing enables us to offer significant price advantages without compromising quality. We also provide flexible OEM and ODM services to meet your specific product requirements.

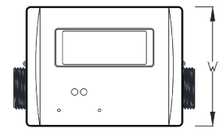
Meter Sizes

Performance	Parameters(R50)		
Nominal Diameter	Minimum flow rate Qi(m³/h)	Common flow rate QP (m³/h)	Maximum flow rate Qs (m³/h)
DN15	0.03	1.5	3
DN20	0.05	2.5	5
DN25	0.07	3.5	7
DN32	0.12	6	12
DN40	0.2	10	20

Dimension

Nominal Diameter	Length L (mm)	Width W (mm)	Height H (mm)	Thread Diameter D
DN15	110	83.8	78	G3/4"B
DN20	130	83.8	84	G1"B
DN25	160	83.8	89	G1 1/4"B
DN32	180	83.8	94	G1 1/2"B
DN40	200	83.8	102	G2"B





Technical Data

Measured Medium	Domestic water (other liquids require customization) and must fill the pipe
Nominal Diameter	DN15～DN40
Q3/Q1	R50/R100
Accuracy Class	2
Power Supply	DC3.6V lithium battery
Operating Pressure	16bar
Environment Class	A
Temperature Difference Measurement Range	4°C～95°C
Temperature Difference Range	2K～75K
Pressure Loss	△P25
Heat Consumption Calculation	Starting from 1K
Temperature Resolution	0.01°C
Electromagnetic Ambient Condition	E1 (optional E2 level)
Maximum Water Volume Reading (m³)	999999.99
Maximum Heat Reading (Kw·H)	99999999
Battery Life	＞10 years
Temperature Sensor	PT1000 platinum resistor
Pipe Material	Brass/Stainless steel
Communication Method	Infrared/M-Bus/RS485/LoRa/LoRaWAN/NB-IoT/Cat1/TTL, etc.
Protection Class	IP65/IP68
Installation Method	Arbitrary angle

Ultrasonic Bulk Heat Meter

HUM1000

- Nominal Diameter: DN50～DN600
- Q3/Q1: R50/R100
- With Valve / Without Valve

NB-IoT Cat1 LoRa LoRaWAN RS 485 M-Bus M-Bus

Accuracy
The heat meter has an approved dynamic range of 100:1 (qp:qi). This gives you the advantage of being able to measure every thinkable consumption, and in turn you can benefit from a reduced loss of distributed energy.

Temperature Range
The wide temperature range enables the utilisation throughout the distribution network, giving you the benefit of only having to operate and maintain one type of meter regardless of if it is placed in a substation, light industrial application.

Remote reading
Comes with integrated communication that allows for safe and easy remote reading via either cable or network. The flexible connectivity options include NB-IoT,Cat1,LoRa, LoRaWAN,RS485, M-Bus,M-Bus wireless.

Battery lifetime
Powered from a lithium battery. Depending on use and setup, the lifetime is up to 10 years.

Data Package
HUM1000 offers a variety of data packages to transmit to your utility. Choose the right data package to suit your needs when ordering the meter and reconfigure it at a later point in time if needs change.

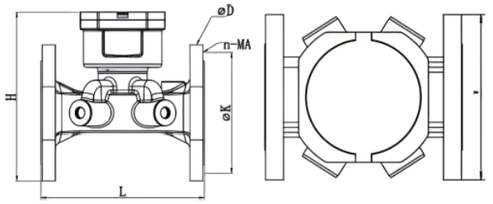
Price-friendly
Our vertically integrated, in-house manufacturing enables us to offer significant price advantages without compromising quality. We also provide flexible OEM and ODM services to meet your specific product requirements.

Meter Sizes

Performance	Parameters(R50)								
Nominal Diameter	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250	DN300
Minimum flow rate Qi(m³/h)	0.3	0.5	0.8	1.2	2.0	3.0	5.0	8.0	12.0
Common flow rate Qp(m³/h)	15	25	40	60	100	150	250	400	600
Maximum flow rate Qs(m³/h)	30	50	80	120	200	300	500	800	1200

Dimension

Nominal Diameter	Length L (mm)	Width W (mm)	Height H (mm)	Flange Hole
DN50	200	165	228	4-M16
DN65	200	185	245	4-M16
DN80	225	200	261	8-M16
DN100	250	220	270	8-M16
DN125	250	250	293	8-M16
DN150	300	285	308	8-M20
DN200	350	340	343	12-M20
DN250	450	405	493.5	12-M24
DN300	500	460	547.5	12-M24



Technical Data

Measured Medium	Domestic water (other liquids require customization) and must fill the pipe
Nominal Diameter	DN50～DN600
Q3/Q1	R50/R100
Accuracy Class	2
Power Supply	DC3.6V lithium battery
Operating Pressure	16bar
Environment Class	A
Temperature Difference Measurement Range	4°C～95°C
Temperature Difference Range	2K～75K
Pressure Loss	△P25
Heat Consumption Calculation	Starting from 1K
Temperature Resolution	0.01°C
Electromagnetic Ambient Condition	E1 (optional E2 level)
Maximum Water Volume Reading (m³)	999999.99
Maximum Heat Reading (Kw·H)	99999999
Battery Life	＞10 years
Temperature Sensor	PT1000 platinum resistor
Pipe Material	Ductile Iron
Communication Method	Infrared/M-Bus/RS485/LoRa/LoRaWAN/NB-IoT/Cat1/TTL, etc.
Protection Class	IP65/IP68
Installation Method	Arbitrary angle

Intelligent Valve

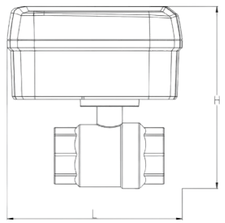
HVS100

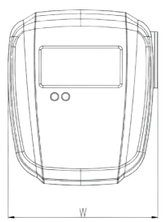
- Wireless/wired connection
- Automatic adjustment
- Remote online upgrade

NB-IoT Cat1 LoRa M-Bus RS 485

Features

- Ultra-low power, battery/external power.
- Valve opening time recording.
- Optional inlet/return water temp control, real-time valve opening calculation/adjustment.
- Remote valve control, abnormality detection,tamper-proof.
- Timed valve switch (anti-rust), configurable cycle.
- Precise valve opening control, magnetic pulse adjustment, time adjustment, etc.
- Alarms: low battery, valve/temp abnormality, sudden temp change, etc.
- OTA online upgrade support.





Nominal Diameter	L (mm)	W (mm)	H (mm)	D
DN15	103	88	99	G1/2"B
DN20	103	88	107.5	G3/4"B
DN25	103	88	116	G1"B
DN32	103	88	123	G1 1/4"B

Technical Data

Operating Voltage	DC3.6V/DC12-24V/AC12-20V
Communication Method	M-Bus/RS485/LoRa/NB-IoT/Cat1
Temperature Sensor	PT1000
Display Mode	LED/LCD

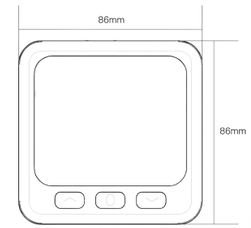
Indoor T+H Sensor

TH1

The Indoor T+H Sensor determinds the temperature and relative humidity of indoor spaces. The sensor supports the user in optimizing the heating behavior. The current temperature and humidity values can be read at any time on the display of the device. The data recorded and stored by the device can be transmitted to downstream recording systems using wireless radio technology.

Features

- Measurement, display and data transmission of temperature and humidity.
- Data transmission via wireless.
- Remote valve control.
- Internal antenna.
- LED with backlight.
- Plug & Play – start-up mode.
- Powered by two AA batteries for easy replacement.
- Wall mounting according to the 86 standard.



Technical Data

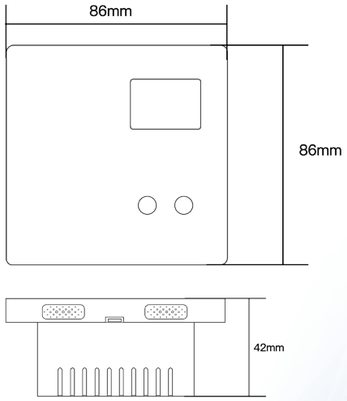
Temperature Display Range	0°C～50°C
Temperature Setting Range	5°C～35°C(system-adjustable)
Temperature Measurement Accuracy	±0.5°C
Humidity Display Range	0%～99.9%
Communication Method	470MHz wireless communication
Power Consumption	⩽0.1mW
Power Supply Method	AA batteries × 2
Dimensions	86mm*86mm*19mm

NB-IoT Temperature and Humidity Collector

This product adopts a new-generation temperature-humidity acquisition chip and a high-performance, low-power NB-IoT wireless module, ensuring more accurate temperature-humidity collection and stronger environmental adaptability. It supports setting data acquisition & reporting cycles, records historical collected data, and is widely used in scenarios requiring room temperature collection.

Features

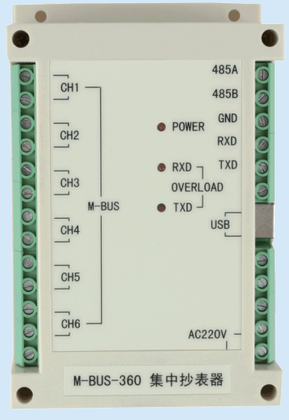
- 86-box design, 5-hole socket; easy installation.
- LCD screen displays: temperature, humidity, working status, signal strength, etc.
- Configurable collection period (min. 10s, default 30s).
- Configurable reporting cycle & fixed-time reporting.
- Temperature steep drop alarm.
- Discretized upload time (network load balancing, avoids congestion).
- Supports telecom/mobile/custom platform access.
- Supports infrared & OTA (continuous function optimization).



Technical Data

Power Supply	AC220V
Static Power Consumption	⩽0.3W
Temperature Measurement Range	-10°C～85°C
Humidity Measurement Range	1%～99%RH
Temperature Measurement Accuracy	±0.3°C (Resolution 0.1°C)
Humidity Measurement Accuracy	±2% RH (Resolution 0.1%RH)
Display Method	LCD

M-Bus Concentrator



The M-Bus concentrator adopts the European standard 2-wire bus, and has the advantages of large load capacity, convenient installation and debugging, high reliability and strong compatibility. It has long transmission distance, accurate signal and convenient wiring construction, and is widely applicable to the centralized reading and management of heat information in complex environments. It has multiple interfaces for connection with the upper computer, facilitating networking and on-site debugging.

Features

Bus Power Supply & Transmission

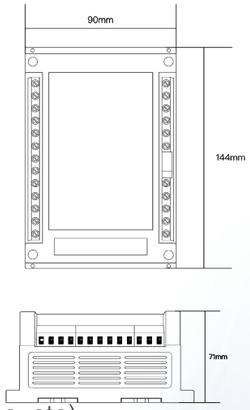
- M-Bus concentrator powers slave devices.
- 2-core wiring; max transmission distance 1000m.
- Polarity-free installation (cuts construction costs).

Repeater

- Transmits collected data to next-level device (as host).
- Receives next-level data (as host) & forwards to upper-level host (as slave).

Overload Protection

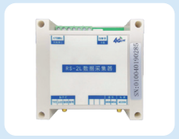
- M-Bus concentrator auto-shuts down on overload/short circuit (ensures system safety); auto-resets after troubleshooting.
- Compatible with M-Bus instruments (water/electricity/heat/gas meters, valves, etc).



Technical Data

Operating Voltage	AC220V
Static Power Consumption	⩽3W
Load Current	300mA
Uplink Interface	USB/RS232/RS485
Downlink Interface	M-Bus
Load Quantity	360 standard loads (6 channels, 60 per channel)
Wiring Requirements	0.75mm² ~2.5mm² standard copper core wir
Transmission Distance	1000m

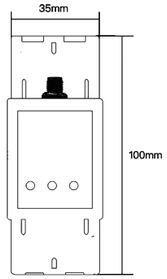
Data Collector

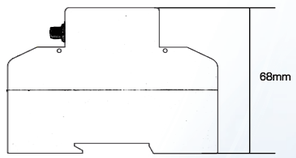


The data collector serves as an indispensable communication hub between meters and management system terminals in remote centralized meter reading systems. It facilitates device maintenance while ensuring the security and stability of data collection, and is widely used in fields such as metrology, control measurement and remote monitoring.

Features

- Efficient power (opt. solar for off-grid), easy deployment.
- Multi-device connection; real-time data collection, compression & encryption (integrity/security).
- Network heartbeat: maintains active server connection.
- Auto time calibration post-networking (data timeliness/accuracy).
- Full network coverage; supports FDD-LTE/TDD-LTE (long-distance comm.).
- Remote device monitoring/management:reduces on-site maintenance.
- Easy installation/maintenance; no manual setup (plug-and-play).
- Permanent online; auto-reconnection on disconnection.
- Rich interfaces for multi-scenario meters.
- Supports RS485 & OTA upgrades (meets evolving needs).





Technical Data

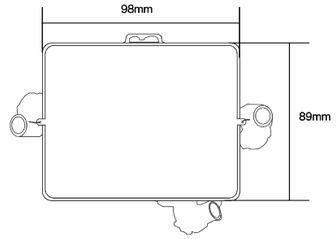
Working Voltage	AC220V (solar power optional)
Uplink Interface	4G
Downlink Interface	RS485/LoRa
Load Quantity	RS485-32units/LoRa-1000units
Ambient Temperature	-25°C~60°C
Ambient Humidity	<95%RH

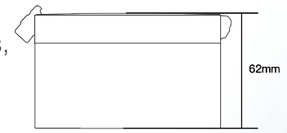
NB-IoT Collector

It adopts NB-IoT communication technology, featuring low power consumption, long service life with battery power supply, wide coverage, strong network compatibility and full-network support. It has functions of timed data collection and active data reporting, and its flexible configuration can meet various needs, making it suitable for all types of scenarios.

Features

- Battery-powered; outputs power to subordinate instruments/sensors.
- Auto-detects pressure & uploads to platform.
- Regularly reports subordinate instruments' data to platform (per set collection period).
- Remote configuration of collector working parameters via management software.
- RS485 & M-Bus support transparent data transmission; upgrades RS485/M-Bus instruments (water/electricity/heat/gas meters, pressure gauges, etc.) to NB-IoT remote transmission.
- Supports OTA (continuous function optimization).





Technical Data

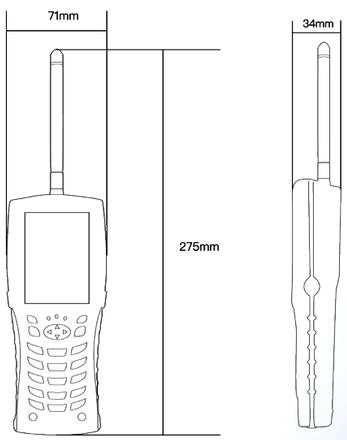
Operating Voltage	DC3.6V
Uplink Interface	NB-IoT
Downlink Interface	RS485/M-Bus
External Power Supply	12V
Load Quantity	16 pieces

Handheld Meter Reader

The water meter handheld device communicates with water meters wirelessly, mainly used for wireless water meter data reading/writing, parameter setting, production testing, and installation & debugging. Equipped with a built-in rechargeable battery, it requires no external power supply and features long communication distance, simple operation, easy portability, and high cost-effectiveness.

Features

- Equipped with USB high-speed transmission function, advanced file system, and support for DBF database.
- Carry out data transmission and batch processing.
- Independently read single meter or batch meter reading.
- Data can be saved and uploaded to management system through the USB port.
- Batch production test and parameter setting, which is convenient for production process test.
- Collect data and set parameters from infrared,LoRa,NB-IoT, Cat1,M-Bus,RS485 and other devices.



Technical Data

Power Supply	Lithium battery
Display Method	Color LCD touch screen
Data Interface	USB
Communication Mode	Infrared/LoRa/NB-IoT/Cat1/M-Bus/RS485,etc.

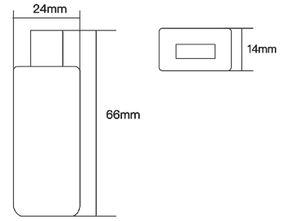
Portable Meter Reading Equipment

The portable meter-reading device supports functions such as meter-end data reading and parameter setting, facilitating meter management and improving production efficiency.

Features

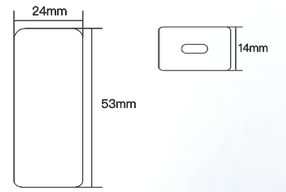
USB To Infrared Meter Reading Device:

- Connect the computer through USB port, connect the equipment through the infrared, reading data,setting parameter in the computer, improve production efficiency.



Bluetooth To Infrared Meter Reading Device:

- Powered by Type-c port.
- Connect the mobile phone through bluetooth,connect the equipment through infrared,reading data,setting parameter on the phone applet and synchronize to the intelligent instrument cloud system.



Technical Data

	USB To Infrared Meter Reading Device	Bluetooth To Infrared Meter Reading Device
Operating Voltage	5V	5V
Uplink Interface	USB	Bluetooth
Downlink Interface	Infrared	Infrared
Supporting Software	Stand-alone Software	WeChat Applet

Solutions

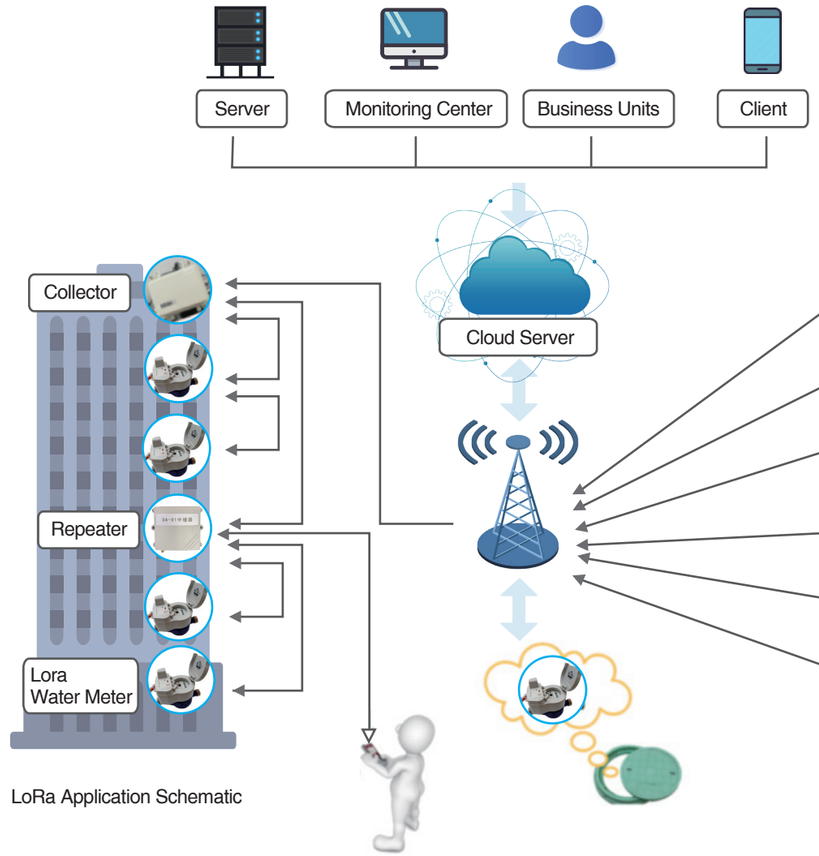
Smart Water Application Solution

The figure below shows a typical smart water management application. This solution utilizes multiple transmission methods, including Cat1, NB-IoT, LoRa, and wired networks, to overcome the challenges of traditional water meters, such as installation location, complex residential environments, and weak signal coverage. It effectively addresses the issue of reliable data transmission between smart water meters and the system, enabling online water meter monitoring, automated management, unmanned meter reading, and remote control. This significantly enhances the intelligent management of water meters and effectively reduces operating and management costs for water supply providers.

Cat1 IoT communication technology seamlessly integrates into existing LTE networks without requiring base station modifications, offering fast connection times and speeds. NB-IoT IoT communication technology features low power consumption, wide coverage, high connectivity, and high security. Cat1 and NB-IoT water meters communicate directly with cloud servers via telecom base stations for meter reading and data exchange. Removing the need for intermediary devices such as data collectors, the system is simple and easy to maintain.

When real-time transmission is required and network coverage is limited, LoRa transmission can be used to transmit data to data collectors, which then aggregate the data to the cloud platform.

The system is also compatible with traditional wired water meters such as M-Bus and RS485. Each meter is intelligently connected through a data collector. After conversion by the collector, the data is transmitted to the server via the 4G/5G public network, achieving unified compatibility of meters with different transmission methods.



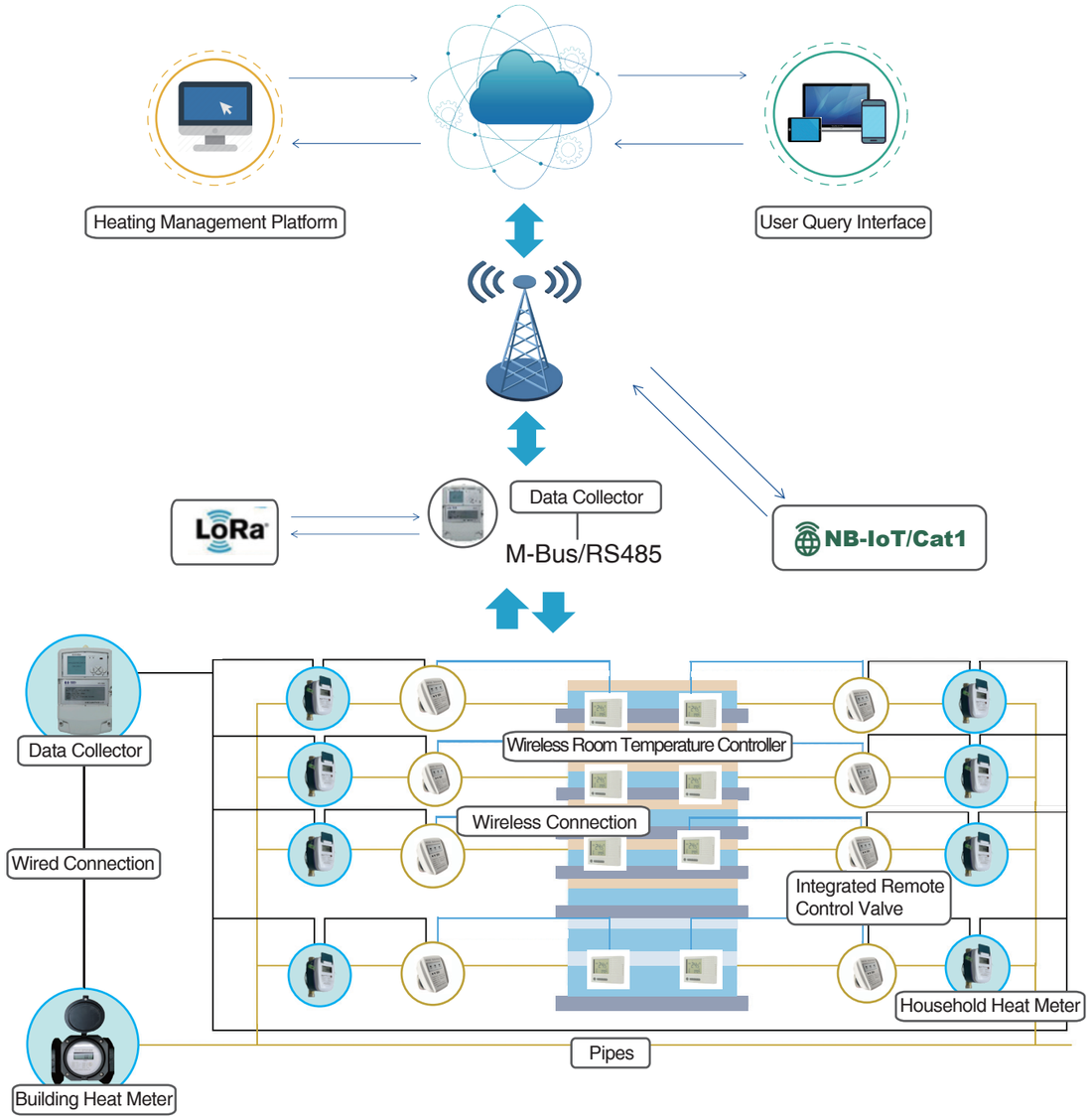
LoRa Application Schematic

NB-IoT/Cat1 Application Schematic

Heating Energy-saving Application Solution

A typical heating energy-saving application solution is shown in the figure below. This solution, configured with various instruments and equipment such as heat meters, intelligent regulating valves, temperature controllers, and collectors, overcomes the many drawbacks of traditional heating solutions, such as separate metering, time-based, and area-based charging, while meeting the requirements of "household-based circulation, room-based temperature control, and metered charging." It utilizes a variety of heating energy-saving methods, including integrated metering and temperature control, the on-off time-area method, and the temperature-area method, to effectively balance metering, charging, and energy conservation in smart heating.

This solution not only achieves automated heat metering, user-controlled heat consumption, intelligent system regulation, and scientific platform supervision, but also achieves overall energy conservation and consumption reduction for the heating system, effectively reducing the operating and management costs of heating units.



Smart Meter Management Platform

The platform is a comprehensive management platform integrating system management, equipment management, production management, marketing and billing, data reading, energy consumption analysis, and intelligent early warning. Based on water meters, flow meters, heat meters, electricity meters, intelligent regulating valves, pressure sensors, and water quality analyzers, it connects each meter intelligently through built-in communication modules and data collectors, enabling two-way communication from the terminal to the cloud. Data is aggregated into a cloud database and a cloud-based intelligent management system is built, enabling remote automatic data reading, intelligent control, autonomous settlement, online bill payment, energy consumption analysis, and energy-saving management.

SaaS Architecture

The platform utilizes a SaaS architecture, supporting all major browsers. Multi-user collaboration allows for collaborative management and operations, significantly improving work efficiency. All data is stored in the cloud, preventing data loss and other issues.

Integrated Data Collection and Revenue Collection

Data collection and marketing collection are integrated, eliminating the need for two separate systems. Supports tiered electricity and water pricing, as well as various marketing strategies such as discounts and exemptions.

Online Payment

You can pay online via WeChat or Alipay, and check usage, balance, and payment information. Based on your needs, you can integrate with third-party platforms like the One Card System and UnionPay to enable multiple payment methods.

Data Storage

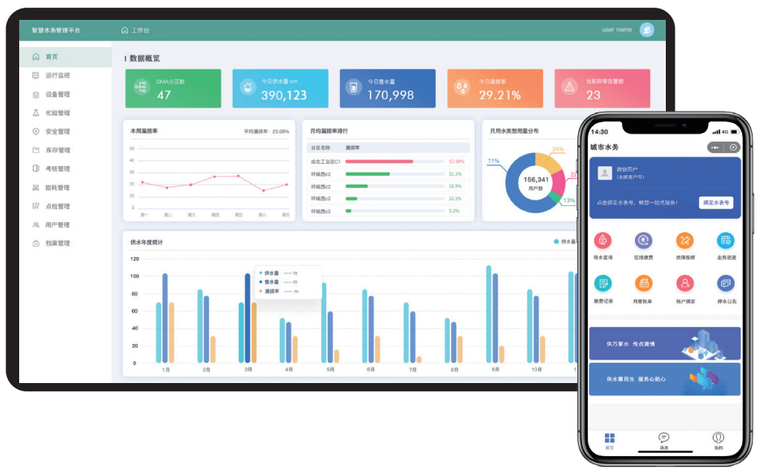
Provides up to 24 months of storage for meter reading and usage information. Expired data can be retained or discarded based on customer needs. Sensitive data is encrypted using various methods, including AES, to ensure data security.

System Management

Unified management of platform accounts, roles, and permissions. Monitoring and handling of platform anomalies. Centralized management of platform notifications. Log management of all platform tasks, actions, communications, and operations. Centralized configuration of platform parameters and status. Centralized management of third-party platform access and open interfaces.

Mobile Extension

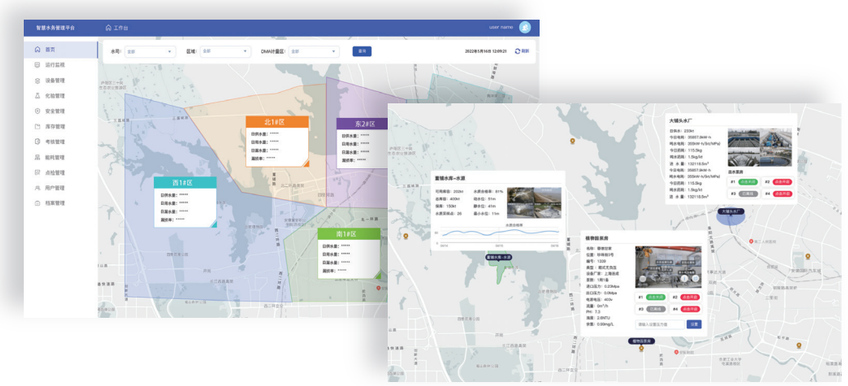
Integration with platforms like WeChat and Alipay makes it easy for users to contact customer service, check bills, and make payments. The platform can also push business notifications to improve service quality.



Pipe Network Monitoring and DMA Partition Metering System

The system uses online monitoring equipment such as flow meters, pressure sensors, and water quality analyzers to provide real-time sensing of the water supply system's operating status, visualizing the operational status of water supply facilities and key data, forming an "Urban Water Internet of Things." The pipe network monitoring and DMA partition metering system includes multiple subsystems, including a GIS information system, a file management system, and a data analysis system.

It divides the water supply area into multiple measurable zones (DMAs) based on the network's service area and length. This enables regionalized and grid-based management of the city's water supply network, enabling timely analysis and processing of massive amounts of water information. It accurately measures regional water losses and water production/sales discrepancies, and scientifically analyzes the causes of leakage and production/sales discrepancies within the network and at all levels of zones, effectively managing the city's water supply, water use, consumption, and leakage.



DMA Partition Management

Based on the pipe network GIS and big data analysis, DMA partitions are managed and regional water leakage and regional production and sales difference water are calculated.

Isobar Analysis

Real-time online analysis of hydraulic isobars can be used to manage the network pressure distribution at each collection point, effectively solving problems such as uneven network pressure distribution and pipe bursts.

Leakage Rate Analysis

The system conducts comprehensive big data analysis based on the data uploaded by each collection point and other information, calculates the leakage rate for each DMA partition, and automatically generates a chart. Combined with the leakage rate change curve, it provides data analysis support and continuously reduces the leakage rate.

Production and Sales Gap Analysis

Based on the data collected by the system, various types of water use data models involved in the water supply network are analyzed to provide data analysis support for water supply management departments and reduce the gap between production and sales.

Intelligent Water Plant Management System

The system adopts technologies such as the IoT, cloud computing, and 5G, and is equipped with a series of sensing equipment such as water quality testing and pipeline network monitoring. It builds unmanned pump rooms and enables smart instruments, providing water supply units and competent departments with a central control command center with comprehensive management cockpit functions. The center covers business units such as production automation, water source monitoring, process management, laboratory management, safety management, inventory management, personnel management, patrol inspections, alarm warnings, work order management, customer service management, and comprehensive analysis, meeting the water plant's refined management needs and achieving the management goals of safe production, cost reduction, and efficiency improvement.

Intelligent Production

Including units such as production automation, water source monitoring, and process management. Through the automated system, key production sites, such as water sources, filter tanks, and clear water tanks, are remotely monitored. Water quality can be analyzed and water levels monitored according to set instructions, and the normal operation of the water intake pump room can be monitored. Remote control, unmanned operation, and intelligent scheduling are achieved from the central control and command center.

Information Management

Including units such as laboratory management, safety management, inventory management, personnel management, inspection and spot checks, work order management, and customer service management. Through electronic and information-based approaches, the platform integrates production management processes and business data, promoting the informatization of management methods and improving management efficiency and quality.

Smart Decision-making

Including alarm and warning systems, data dashboards, and comprehensive analysis. It utilizes multiple algorithmic models to cluster and aggregate business data. Based on expert models and empirical data, it then outputs optimized decision-making analysis reports, identifying shortcomings and vulnerabilities in the production process. This provides reliable data-driven support for optimized management decisions and promotes intelligent management decision-making.

Pump Room Intelligent Monitoring System

The system utilizes water supply equipment sensors, video security facilities and other equipment to meet the needs of multi-stage pump station pump room water quality monitoring, unit operation status monitoring, water level monitoring, energy consumption monitoring, pipeline flow monitoring, pipe network terminal pressure monitoring, environmental monitoring and other needs. It also visualizes the monitoring data to achieve image surveillance of the front pool, pump room, control room and duty room. At the same time, it can construct a pump station operation configuration scene diagram to dynamically present the pump station operation status, truly realizing the intelligent monitoring of the pump room.

Business Monitoring

According to the business logic of the specific pump station operation, key indicators of the pump station monitoring system are set, such as water age monitoring, pump station equipment abnormality alarm, water tank liquid level abnormality alarm, etc., and multi-partition and multi-linkage can also be achieved.

Integrated Monitoring

On the premise of ensuring the stable operation of system equipment, it is expanded to the unified monitoring and management of key information such as pump station equipment monitoring, alarm, access control, video monitoring, and power environment.

Decision Support

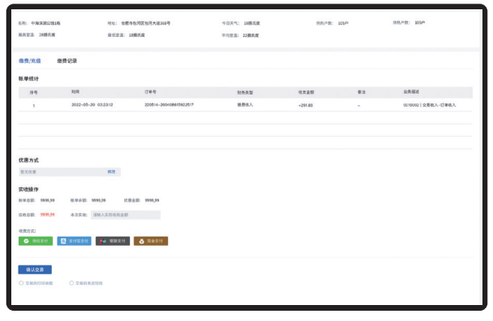
Through the integrated processing of IoT management logic, functions such as special situation notification and processing operations, historical data analysis and decision support, configuration simulation and equipment protection, and remote control can be realized.

Monitoring Terminal Expansion

Remote monitoring and management of pumping stations is achieved through computer web pages and mobile apps. Leveraging IoT and big data technologies, equipment operation records, historical curves, and alarm information can be viewed in real time on the mobile app.

Intelligent Heating Integration Platform

The platform is based on a "microservice" architecture, integrating automation technology, Internet of Things technology, geographic information technology and other technologies. It conducts all-round monitoring of the operating data of the heat exchanger station and heat source plant of the heating unit, the indoor temperature of the heating unit or residents, the pipe network pressure, flow and other data, and provides visual auxiliary decision-making suggestions. At the same time, it is compatible with other management system platforms, so that multiple management systems can be interconnected and collaboratively expanded to achieve integrated equipment collection and reading, integrated data management, integrated control and regulation, integrated operation and maintenance management, integrated business charges, and integrated customer service. It can also reserve open interfaces or solutions and pre-set standardized protocols to improve the heating ecological management system with more refined management, so as to achieve the goals of safe heating, balanced heating, energy saving and consumption reduction, and reduced leakage, improve the business management level of heating units, and enhance the heating satisfaction of heating units and residents.



Role Assignments

According to different management permissions, various functional roles such as decision makers, managers, supervisors, engineers, operators, customer service, etc. can be deployed differentially to facilitate the authorization management of the system.

Revenue Settlement

The system supports offline payment at the business hall, as well as multiple online payment methods such as WeChat and Alipay. The revenue settlement system also manages historical bills and summarizes and prints payment records.

Pipe Network Adjustment

By issuing remote commands, the pipeline network is regulated and controlled, including primary network pressure balance regulation, secondary network pressure batch regulation, temperature batch regulation, time-sharing and group shutdown of heat exchange stations, etc.

Load Forecasting

Import historical meteorological data, combine it with historical heating data, and use algorithm analysis to derive a weather load model, create a visual load forecast trend chart, and issue corresponding alarm instructions.

Intelligent Analysis

Through algorithms such as tree diagram analysis, energy consumption models and leakage models (heat loss, pressure loss, water loss) are constructed based on monitoring data from different pipelines, different time periods, and different users, providing a scientific basis for operation and maintenance.