



NWM

**EVERY DROP OF WATER  
WILL CREATE THE VALUE OF LIFE**

# ULTRASONIC WATER METER



Address: No.355, Hongxing Road, Jiangbei District, Ningbo 315032 China  
Tel: +86 574 88195820  
Fax: +86 574 88195855  
E-mail: [sales@nwmwatermeters.com](mailto:sales@nwmwatermeters.com)  
Website: [www.nwmwatermeters.com](http://www.nwmwatermeters.com)  
Version No. NWM-EN/ULTRASONIC202101-1.0



NINGBO WATER METER (GROUP) CO., LTD



# SOLUTION



## ULTRASONIC WATER METER APPLICATION

---

NWM UL-series ultrasonic water meter use advanced measurement technology with high performing AMR solution for residential industrial and agricultural applications

With non-moving parts, high sensitivity and super low pressure loss, NWM UL-Series ultrasonic meter will help the global water utilities in precise measurement and consumption protection.



NWM UL-series ultrasonic water meter offer revolutionary functionalities, various alert notice, and multiply communications include the wired fixed network and mobile connections.

## MEASUREMENT PRINCIPLE

---

NWM UL-series ultrasonic water meter consists of highly accurate ultrasonic transducers, powerful processor and a data archive.

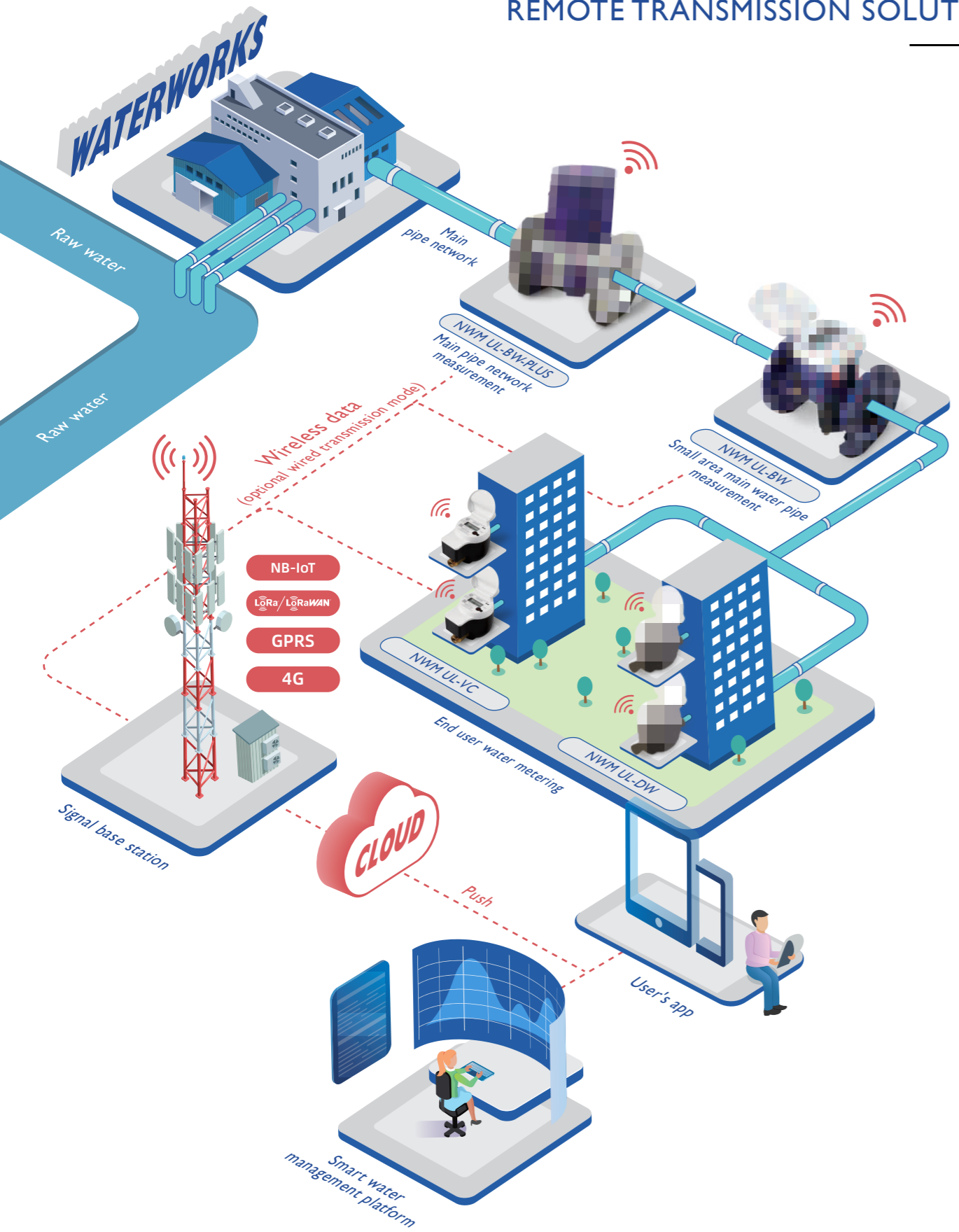
When the ultrasonic beam propagates in the liquid. The flow will make the forward and backward propagation time of ultrasonic beam change slightly. And there is a functional relationship between the propagation time and the flow velocity. With stable flow sensor structure parameters, as long as the detector measures the propagation time of the ultrasonic beam in the liquid, it could obtain the cumulative flow value.

## ULTRASONIC WATER METER CHARACTERISTICS

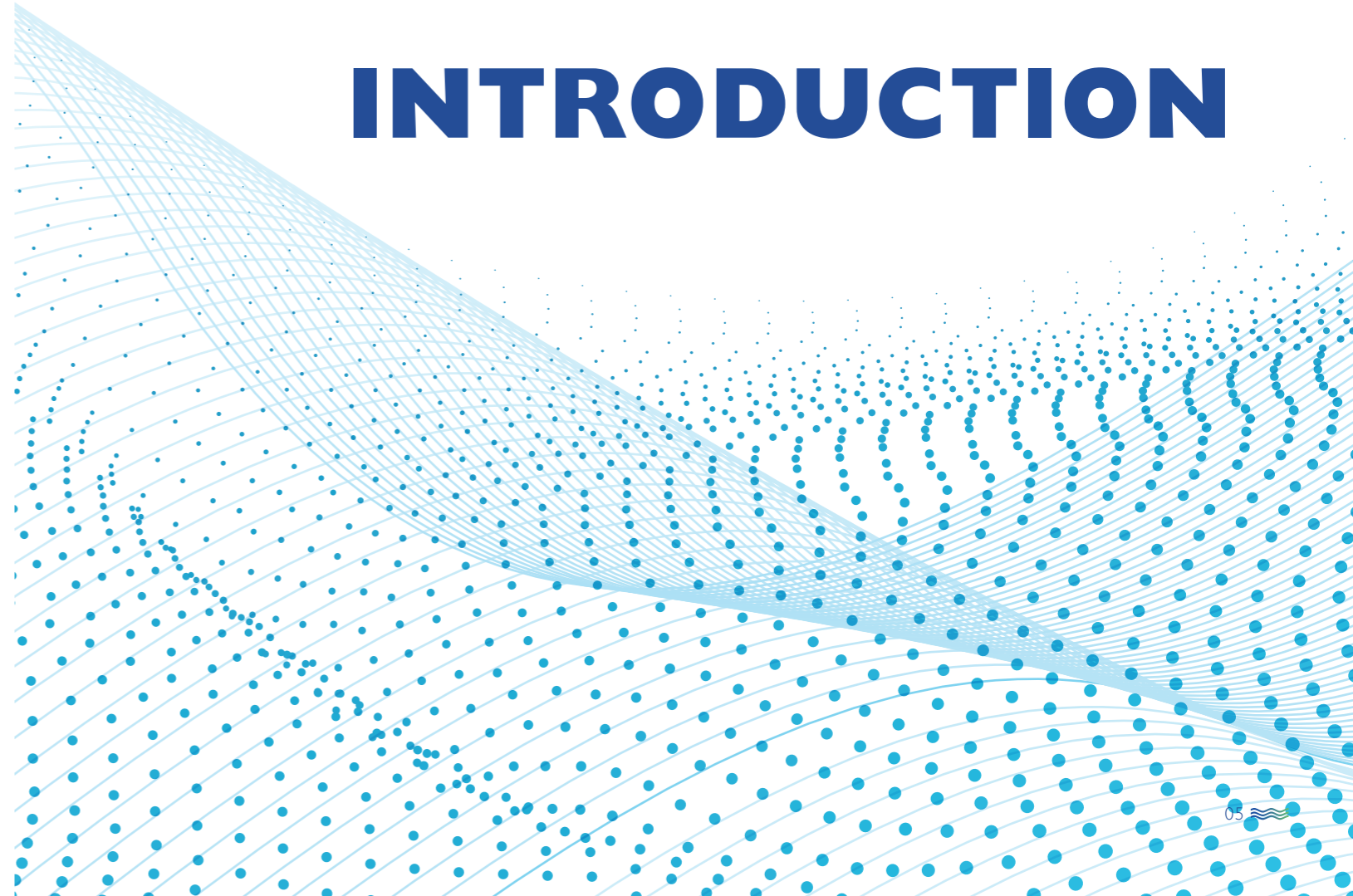
---

- 1 Static meter with no mechanical parts for easier maintenance
- 2 Wide measurement range
- 3 Low pressure loss
- 4 Installation in any position
- 5 Low requirement for water quality
- 6 Monitored sensor by pulse width ratio algorithm
- 7 Non-full-tube alarm
- 8 Maximum 36 months data of cumulative flow
- 9 Maximum 28 days data of daily flow
- 10 Routine data storage

# ULTRASONIC WATER METER REMOTE TRANSMISSION SOLUTION



# INTRODUCTION



# ULTRASONIC

## DOMESTIC WATER METER

NWM UL-DW / UL-VC

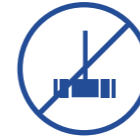
NWM UL-DW is the static ultrasonic water meters covered from Dn15 to Dn40 for domestic and commercial application, its robust design ensures reliable and long lasting precision and support full smart IoT solutions. UL-VC is the valve control variant version that combine this meter with prepaid functionality.



NWM UL-VC

NWM UL-DW

## CHARACTERISTICS



### Non-moving parts

Non-moving parts permitting the most reliable and longer term life; lowest pressure loss;



### High accuracy

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



### Reverse flow detect

It can detect both forward and reverse flow



### Long battery life

10 years battery life, longer endurance



### Communication

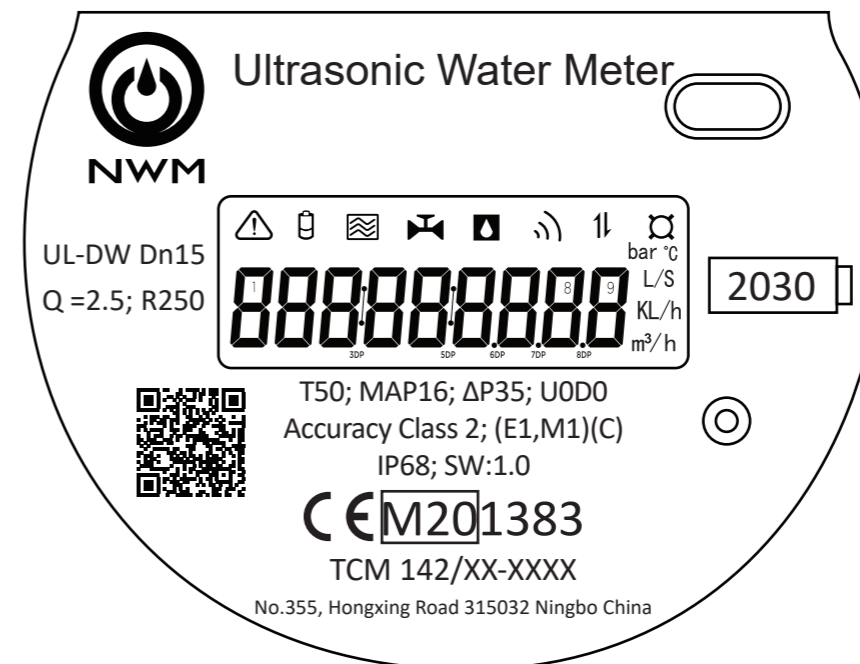
AMR ready for wire or wireless communication



### IP 68

IP 68 environment protection class

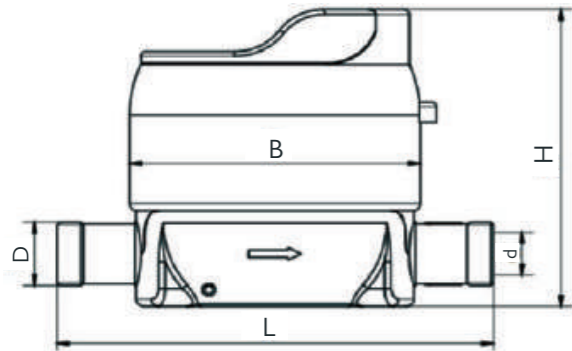
## DIAL FACE DESIGN



- $m^3$  Cumulative flow
- Warning symbol
- Low battery
- Flow symbol
- Valve symbol
- Leakage symbol
- Communication
- Flow direction
- Infrared symbol
- Pressure display
- Temperature display

# SPECIFICATIONS

## ► DIMENSION



Size	Dn15	Dn20	Dn25	Dn32	Dn40
L	130/165	130/154/190	225/260	225/260	245/300
L <sub>1</sub>	244/259	234/258/294	345/380	349/380	331/386
D	G3/4B	G1B	G1-1/4B	G1-1/2B	G2B
d	R1/2	R3/4	R1	R1-1/4	R1-1/2
H	123	123	152	152	152

L<sub>1</sub>: the length of the water meter with connection

## ► METROLOGY

DN	mm	15	20	25	32	40
R	Q <sub>3</sub> /Q <sub>1</sub>	250	250	250	250	250
Q <sub>4</sub>	m <sup>3</sup> /h	3.125	5	7.875	12.5	20
Q <sub>3</sub>	m <sup>3</sup> /h	2.5	4	6.3	10	16
Q <sub>2</sub>	l/h	16	25	40	64	102
Q <sub>1</sub>	l/h	10	16	25	40	64
Starting flow rate	l/h	<4	<4	<4	<8	<11
Max. reading	m <sup>3</sup>	99 999,999				
Min. reading	liter	0.1				
Min. reading (calibration)	liter	0.0001				

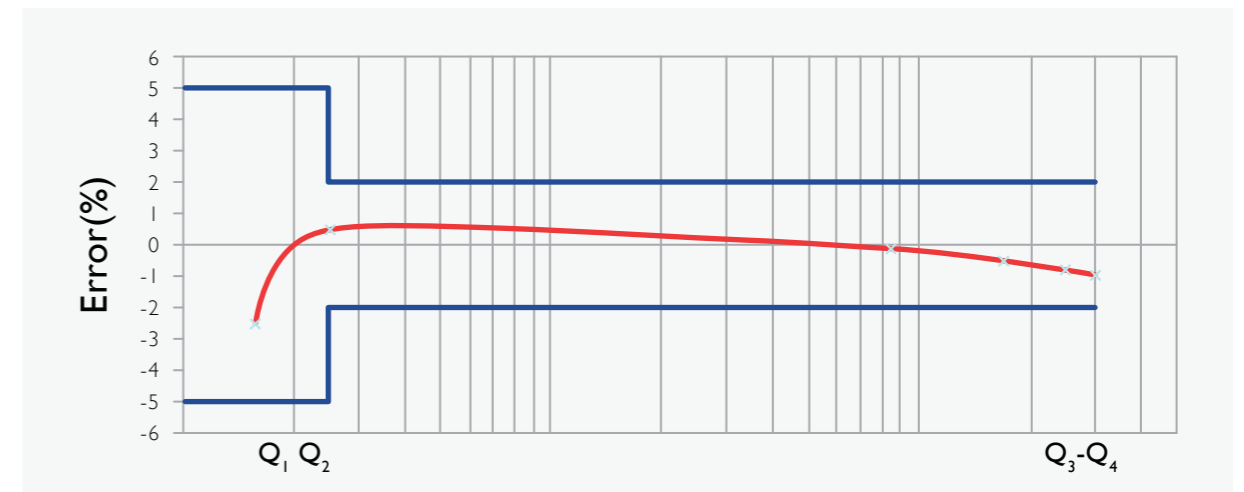
(For different Q<sub>3</sub> and R, please contact with NWM).

## ► MAIN TECHNICAL DATA

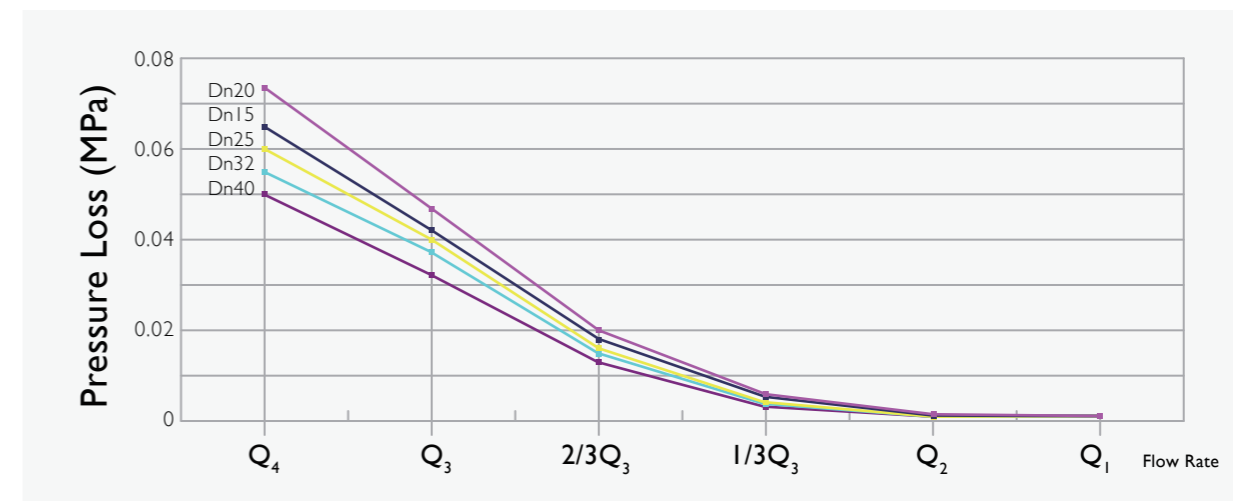
Max. pressure	MAPI 6	Installation position	Any position
Max. temperature	T30、T50	Climate and EMC Class	(B/O)(EI,M1)
Display Interface	Instantaneous flow, Accumulate flow, Wireless signal Working status, Reverse flow detect...		
Communication port	Optical (infrared ray), M-Bus, Pulse Raido Frequency, LORA, NB-IoT...		

## ► MAX PERMISSION ERROR

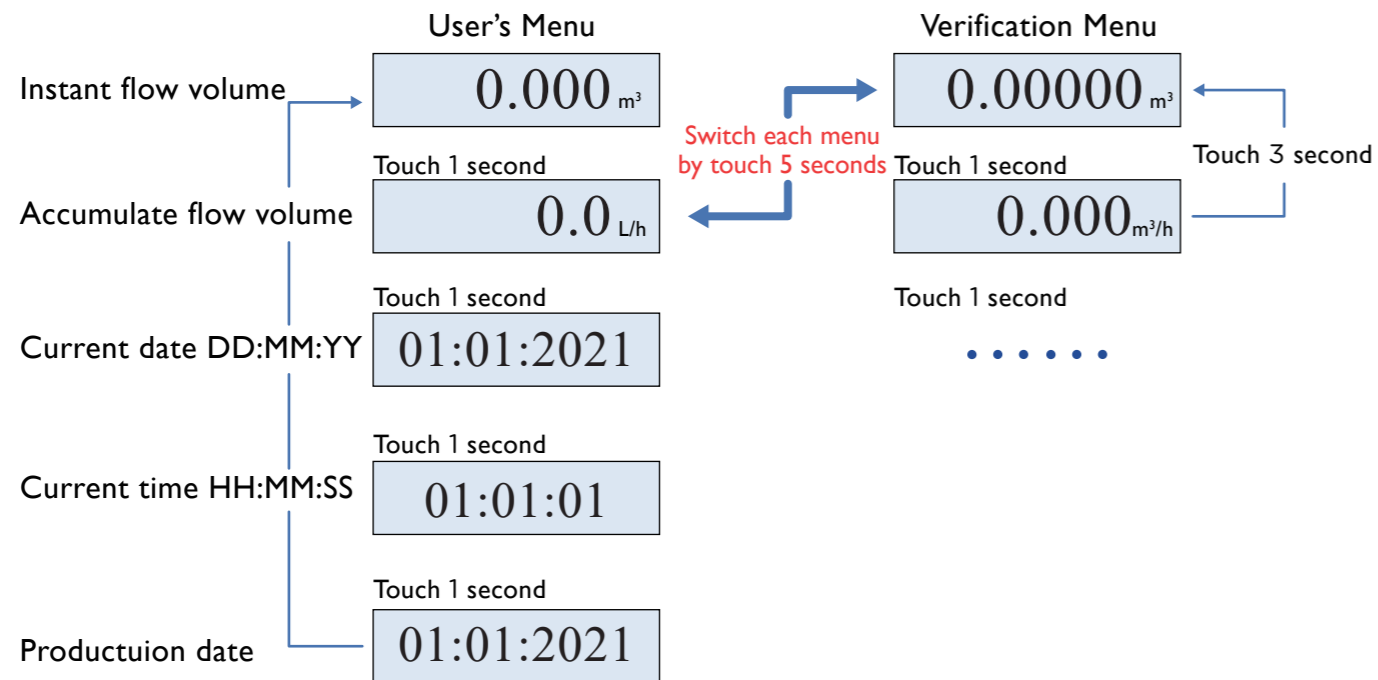
From Q<sub>1</sub> inclusive up to but excluding Q<sub>2</sub> is ± 2% for T30 (From Q<sub>1</sub> inclusive up to but excluding Q<sub>2</sub> is ± 3% for T50); From Q<sub>2</sub> inclusive up to and including Q<sub>4</sub> is ± 5%;



## ► PRESSURE LOSS



## ► DISPLAY MENU



## ► INSTALLATION

Suggest to install the UL-DW or UL-VC water meter at U5 D3 (Straight pipe before the water meter at 5D, after the water meter at 3D);

Water flow should be in the same direction with the arrow on water meter main case; if installed horizontally (or vertically), water meter surface should face right upwards (or right ahead), and it cannot have any deflection from water meter outlet axis;

The installation location should be protected from sunlight, freezing, pollution and water down for easy removing and cannot be installed near the inlet and outlet of the pump;

Flush the pipe work thoroughly to clear all impurities before installing the water meter;

The water meter and pipeline should be connected by pipefitting, sealing gaskets and connecting nuts (the connections).



# ULTRASONIC WATER METER (BULK WATER METER)

NWM UL-BW / NWM UL-BW-PLUS

UL-BW is the cast iron ultrasonic bulk meter with advanced sensors for precise and reliable measurement to commercial and industrial application. The meter combined with high-tech IoT technology for both superior hydraulic performance and instant alarm to realize smart water management.

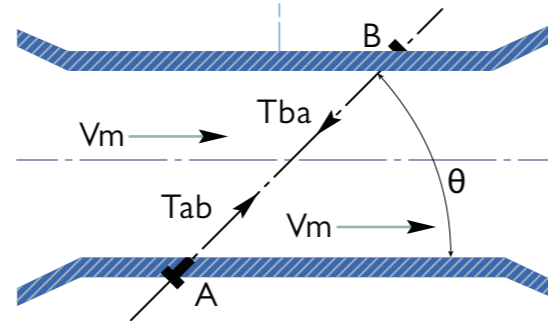
UL-BW-PLUS is the upgrade version that use dual sets of ~~transducer and~~ stainless steel body to ensure wider applicable environment and provide more reliable performance.



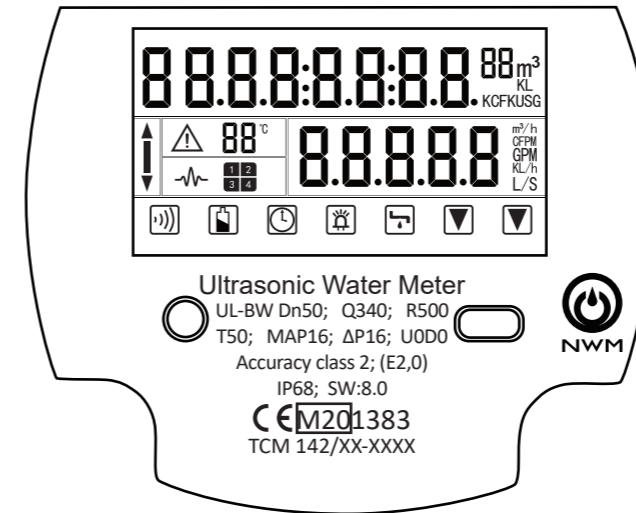
## WORKING PRINCIPLES

The sound wave that flows in the direction of the stream moves faster than the one that flows against the stream.

The transit times  $T_{ab}$  (Transit time of ultrasonic waves from sensor A to measured continuously). The time difference ( $T_{ba} - T_{ab}$ ) is directly proportional to the mean flow velocity ( $V_m$ ) of the liquid. The flow rate is a result of the velocity multiplied by the cross section area of the flow tube size.

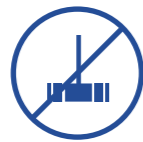


## DIGITAL DISPLAY



- $m^3$  Cumulative flow
- $m^3/h$  Instantaneous flow
- Warning symbols
- $88^\circ C$  Temperature display
- Receiving signal
- Vocal cues
- Flow direction
- Communication
- Low battery
- Time symbol
- Infrared symbol
- Leakage symbol
- Page Up/Down

## CHARACTERISTICS



### Non-moving parts

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



### High accuracy

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



### Long battery life

≥10 years; possible to keep the external battery bag for easy to exchange;



### Communication

AMR ready for wireless, or RS485, M-BUS and other wired communication modes;



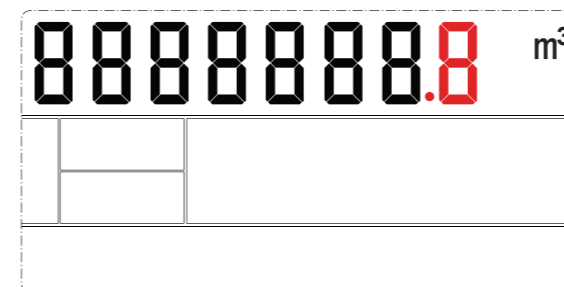
### Rectifying device

With rectifying device

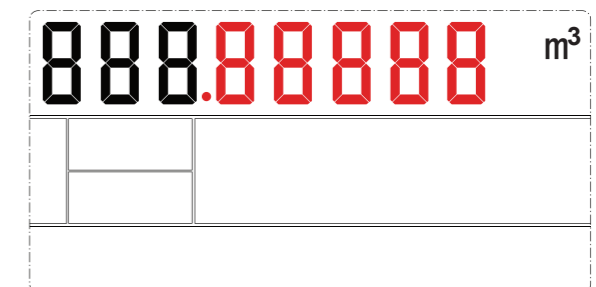


Keeping a magnet on the LEFT-DOWN (Bottom left) of the LCD location for at least 3 seconds to switch the menu from User Mode to Verification Mode.

### User mode



### Verification mode

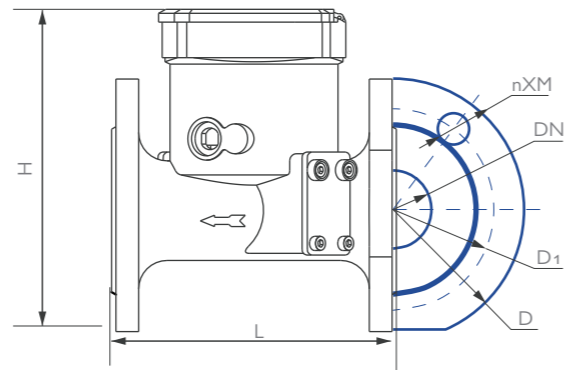




# SPECIFICATIONS

## ► DIMENSION

NWM UL-BW

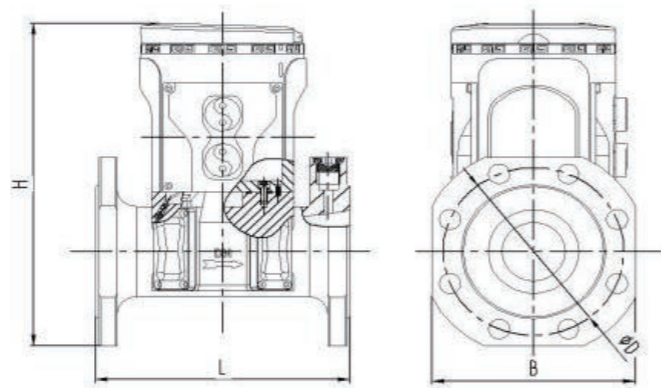


The Flange Standard under ISO 7005-2:1998(E) PN10 as:

Size	Dn50	Dn65	Dn80	Dn100	Dn125	Dn150	Dn200	Dn250	Dn300
L	200	200	225	250	250	300	350	450	500
H	225	230	240	250	285	310	360	410	450
B	165	185	200	220	250	285	340	395	445
D	165	185	200	220	250	285	340	395	445
D <sub>1</sub>	125	145	160	180	210	250	295	350	400
nXM	4×M16	4×M16	8×M16	8×M16	8×M16	8×M20	8×M20	12×M20	12×M20

Different Flange Standard for selecting such as:  
ISO 7005-2:1998(E) PN16, ASME B16.1-Class 125 working for B16.5-Class 150...

NWM UL-BW-PLUS



The Flange Standard under ISO 7005-2:1998(E) PN10 as:

Size	Dn50	Dn65	Dn80	Dn100	Dn125	Dn150	Dn200	Dn250	Dn300
L	200	200	225	250	250	300	350	450	500
H	275	295	310	335	350	385	445	488	533
B	160	170	180	200	250	260	320	380	430
D	165	185	200	220	250	300	340	395	445
D <sub>1</sub>	125	145	160	180	210	240	295	350	400
nXM	4×M16	4×M16	8×M16	8×M16	8×M16	8×M20	8×M20	12×M20	12×M20

## ► METROLOGY

DN	mm	50	65	80	100	125	150	200	250	300
R	Q <sub>3</sub> /Q <sub>1</sub>	250	250	250	250	250	250	250	250	250
Q <sub>4</sub>	m <sup>3</sup> /h	50	50	78.75	125	200	312.5	500	787.5	1250
Q <sub>3</sub>	m <sup>3</sup> /h	40	40	63	100	160	250	400	630	1000
Q <sub>2</sub>	l/h	256	256	403.2	640	1024	1600	2560	4032	6400
Q <sub>1</sub>	l/h	160	160	630	400	640	1000	1600	2520	4000
Max. reading	m <sup>3</sup>	99 999.999								
Min. reading	m <sup>3</sup>	0.00001								

(For different Q<sub>3</sub> and R, please contact with NWM manufacture).

## ► MAIN TECHNICAL DATA

Max. pressure	1.6MPa	Installation Position	Any position
Max. temperature	T30、T50	Climate and EMC Class	O / E2
Protective class	IP68	Accuracy class	I / II
Communication port	RE-485, M-Bus, NB-IoT, GPRS...		

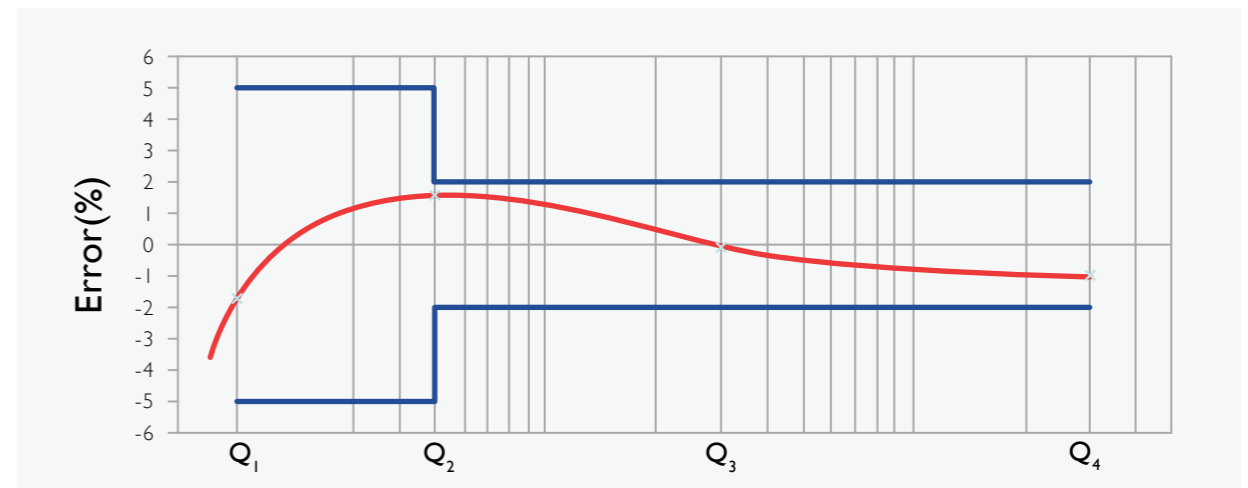
## ► MAX PERMISSION ERROR

### FOR CLASS I

From Q<sub>1</sub> inclusive up to but excluding Q<sub>2</sub> is ± 1%; From Q<sub>2</sub> inclusive up to and including Q<sub>4</sub> is ± 3%;

### FOR CLASS II

From Q<sub>1</sub> inclusive up to but excluding Q<sub>2</sub> is ± 2%; From Q<sub>2</sub> inclusive up to and including Q<sub>4</sub> is ± 5%;



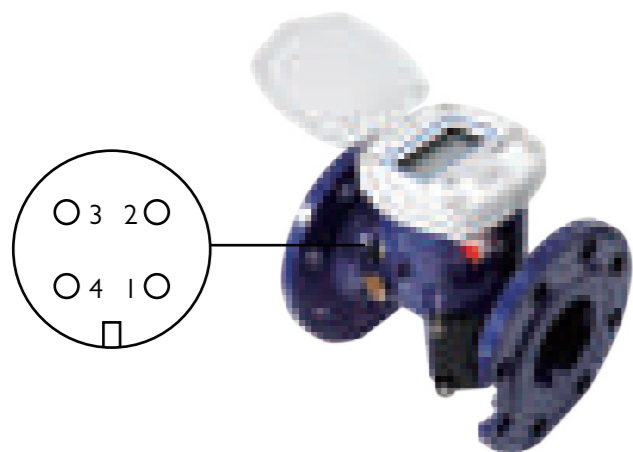
## ► INSTALLATION

Recommend to install the UL-BW water meter at U10D5 (Straight pipe before the water meter at 10D, after the water meter at 5D);

Recommend to install the same size of the filter before the water meter;

Only for Horizontal installation;

## ► OUTPUT

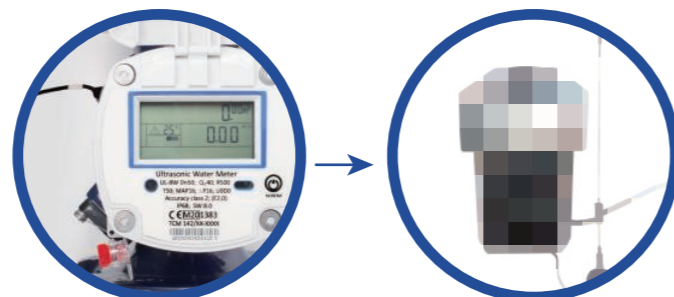


- 1 VCC (DC5~12V) – RED (POWER +)
- 2 NC;
- 3 Pulse Signal Output (DC 0~5V) - YELLOW
- 4 GND – BLUE (POWER -)

## ► DATA COMMUNICATION



**Integrated**  
Built-in remote transmission  
(NB-IoT, GPRS, 4G, RS-485, M-Bus)



**Separated**  
Data monitoring and remote transmission  
(RS-485/M-Bus + NB-IoT/GPRS/4G)

# EQUIPMENT & PLATFORM

# EQUIPMENT

## DATA MONITOR

### NWM D110

Data monitor D110 is a terminal product integrating data acquisition with GPRS, 4G or NB-IoT IoT communication technology. The product can collect multi-channel pulse quantity, switching quantity and analog quantity at the same time. It can automatically complete the data collection, storage, transmission, control, encryption and other functions.



### ▶ KEY FEATURES



#### Real-time Alarm

Real-time monitoring, uploading and saving data, to display and alarm



#### High compatibility

Access to various types of water meters



#### Resend function

Record the failed data and resend together after the communication reply



#### Pressure sensor

Access to pressure sensor



#### IoT communication

Based on IoT platform, no geographical restrictions



#### LCD display

Can query time, flow, pressure, alarm and other information intuitively

### ▶ MAIN TECHNICAL DATA

Power supply	3.6V lithium battery	Storage temperature	-40 °C ~ +70 °C
Communication port	GPRS, 4G, NB-IoT...	Relative humidity	≤95%
Protective class	IP68	RS-485 Baud rate	1200bps~9600bps (can be set)
Explosion-proof class	ExdIIBT4	Size (mm)	147×147×228.7
Working temperature	-25 °C ~ +65 °C	Weight (Kg)	1.6

# SMART WATER

## MANAGEMENT PLATFORM

### ▶ INTRODUCTION

Smart water management platform combines NB-IoT technology, mobile Internet, cloud computing and big data analysis technology. It contains business management, meter reading management, real-time monitor, alarm management, DMA distribute loss management.

### ▶ CHARACTERISTIC



#### Easy access

Compatible with a variety of technology types, multi manufacturer equipment



#### Simple charge

Multiple settlement modes, payment methods and business modes



#### Real-time management

Life cycle management, seamless connection of all links



#### Early warning

Excessive water consumption, water leakage, insufficient balance... the platform will give alarms in advance



#### Good service

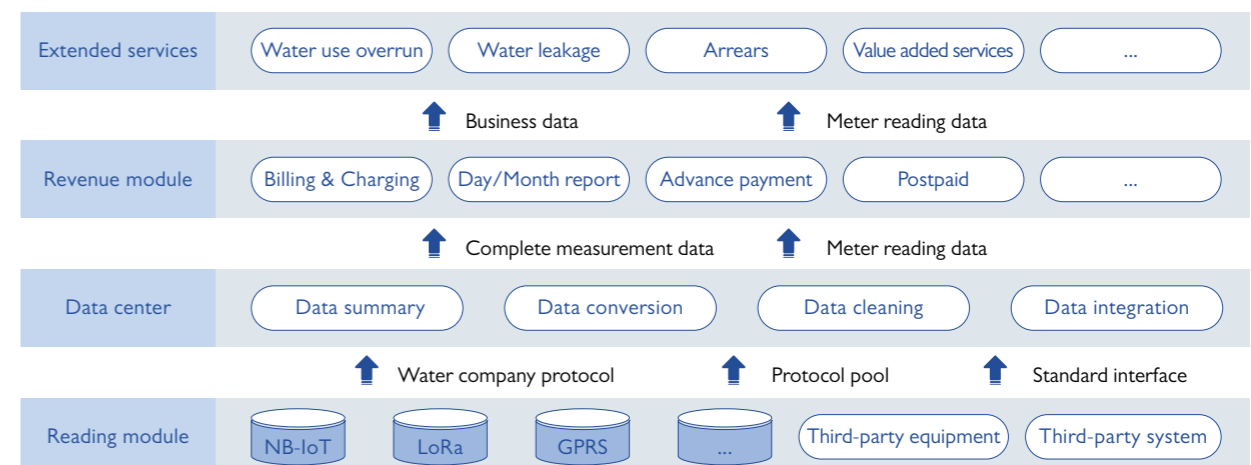
Find problems before users and solve them online and offline in time



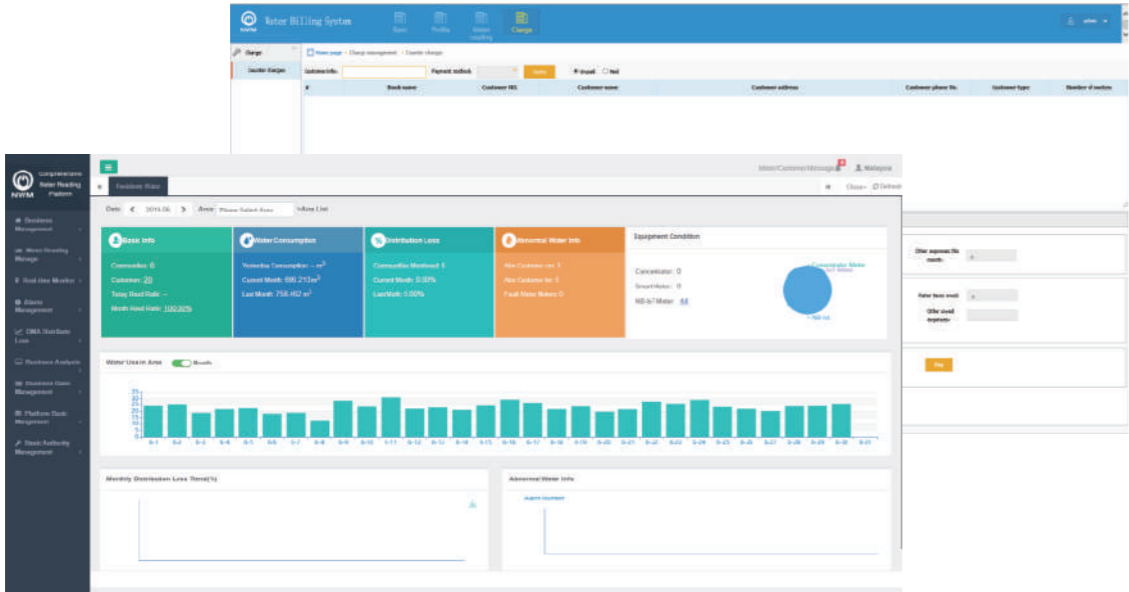
#### Smart management

Realize the leakage analysis, water quality monitoring and pressure monitoring of the whole region

### ▶ ARCHITECTURE

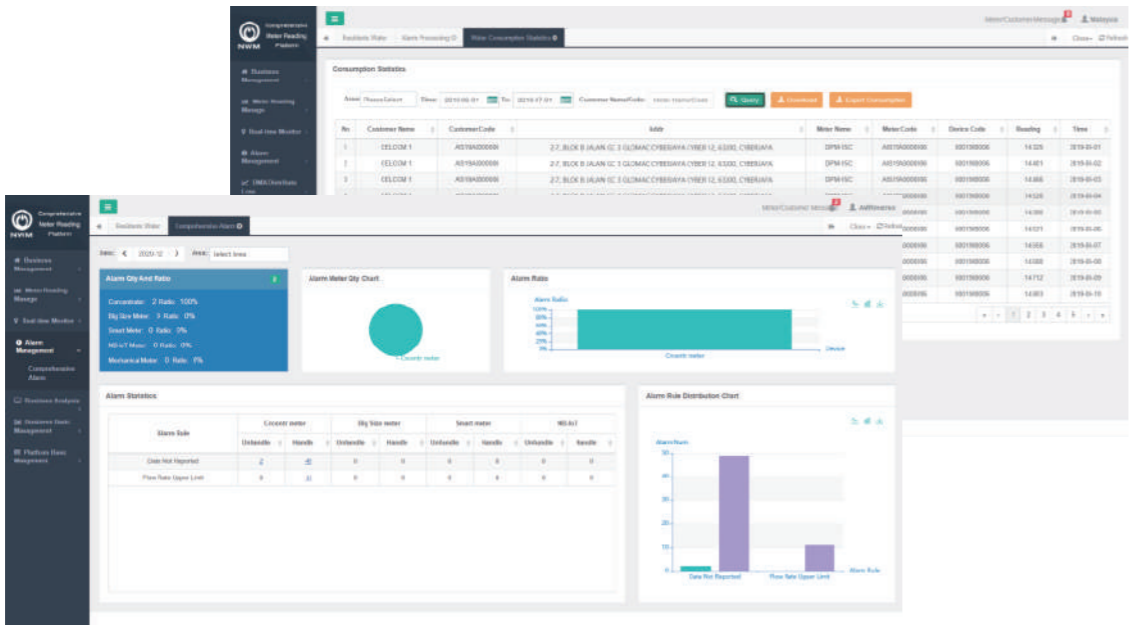


► METER READING & REVENUE INTEGRATION SYSTEM



It is a flexible and future-proof platform for smart metering and intelligent water networks. It provide real-time monitor to all the water meters from NWM that compatible with AMR system

► DATA & ALARM DISPLAY



The smart platform combine the meter reading, customers' billing and data analysis together to help the private or public utilities to maximize revenue while still monitoring valuable resources.