

# LXE Series

## ELECTROMAGNETIC WATER METER



# INTRODUCTION



**让中国制造成为质量优良的代名词！**

PANGU make 'Made in China' as a synonym of excellent quality.

- ◆ First-class production facilities and environment, and strict quality control of entire process of the product.
- ◆ More than 15 years' experience in industrial applications and technical precipitation.
- ◆ The rapid response to professional marketing services and technical support.
- ◆ 100% products delivery inspection.

# LXE Series Electromagnetic Water Meter



## Product Overview

Pangu LXE series electromagnetic water meter is a smart meter designed specifically for water company large-scale trade measurement and community water assessment. According to the new water meter standard of GB/778-2007, LXE Series designed to have a high range ratio (R250, R400), especially suitable for occasions with large flow changes, with very low initial velocity (5mm/s), it has high precision (1, 2), extremely high sensitivity, can ensure that there will be no missing records. There are no movable mechanical parts inside the LXE series electromagnetic water meter, connect the pipeline directly. It conforms to the new water meter standard  $\Delta p63$  pressure loss grade of GB/778-2007, and there will be not stuck like mechanical water meter to ensure long-term measurement accuracy. Customers can configure a pressure sensor to measure both the flow and pressure simultaneously to realize the large user partition metering and checking the water leakage in (DMA) area. LXE series electromagnetic water meter is the best choice for large user metering, pipe network leak detection and loss reduction.

## Best choice for large users to reduce loss and increase gain.

In the pipe network water supply, more and more electromagnetic water meters are used for large-user in metering and regional metering systems. LXE series electromagnetic water meter can reduce the leakage rate, realize the leakage monitoring of the pipe network, and the higher range ratio (R250, R400) can ensure accurate measurement of small flow at night and large flow in high peaks. Avoid missing records, reducing the loss of the pipe network, and improve the user's revenue greatly.



## Advanced structure sensor

Pangu LXE series electromagnetic water meter adopts 304 stainless steel sensors, which has waterproof, anti-electromagnetic interference and anti-corrosion functions. To ensuring that LXE series electromagnetic water meter can be used normally under high pollution and high corrosion environment. LXE series electromagnetic water meter meets various working environments of domestic water meters, straight through structure, almost zero pressure loss, almost zero wear, replace mechanical water meter directly. It can reduce the loss of pipe network and increase the efficiency of water supply. The cost for long-term use is much lower than ordinary water meters. LXE series electromagnetic water meter adopts hygienic rubber lining, which conforms to the national sanitary standard for food rubber products (GB4806.11-2016), and can be directly installed in drinking water pipeline, which is safe and reliable.

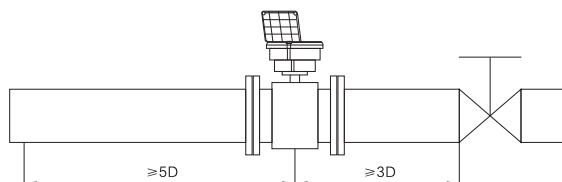
## Intelligent Converter

The intelligent converter of Pangu LXE series electromagnetic water meter adopts layered modular design, good sealing and filling process to ensure that the water meter can reach IP68 protection level and work well for a long time in the water. The meter adopts three lines of screen display. The first line is 12-bit (integer plus decimal) cumulative flow, meets the long-term use of large users. The second and third lines are the 5-bit instantaneous flow and 5-bit instantaneous flow rate. The number of decimal places can be adjusted manually. The battery power and fault diagnosis alarm are also showed on the left side, to ensure the error can be detected and eliminated in time.



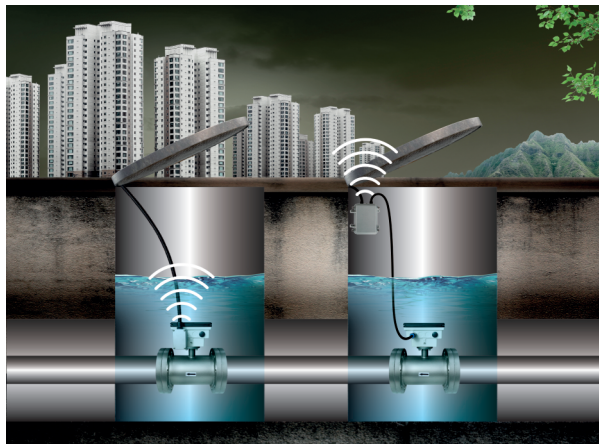
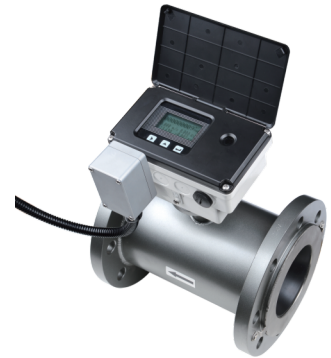
## Easy Installation

Pangu LXE series electromagnetic water meter is powered by 3.6VDC lithium battery, not need external power supply. Low requirements for the front and rear straight pipe sections. Only U5/D3 is required to ensure the accuracy degree of level 1 or 2. The protection level for this meter shell is IP68, can be installed on the surface or deep well. The LXE series electromagnetic water meter is ready for immediate use when it is delivered. It can be put into operation immediately after installation, do not need to setup parameters.



## Use for longer time is saving money

The advanced structure design of Pangu LXE series electromagnetic water meter ensures waterproof, anti-electromagnetic interference and anti-corrosion, and ensure that LXE series electromagnetic water meter can be used normally under high pollution and high corrosion environment. There are no movable mechanical parts inside, will be not stuck like mechanical water meter, and highly tolerance for the measuring water quality. LXE series electromagnetic water meter with light sensor, when the cover is closed, the screen is turned off, it can reduce power consumption. The battery normally service time is more than 5+1 years (standard status), reducing maintenance costs and user fees. Using the battery also can avoid the effects of lightning strikes and power disturbances from external power supplies.



NB-IOT Wireless Remote  
Transmission

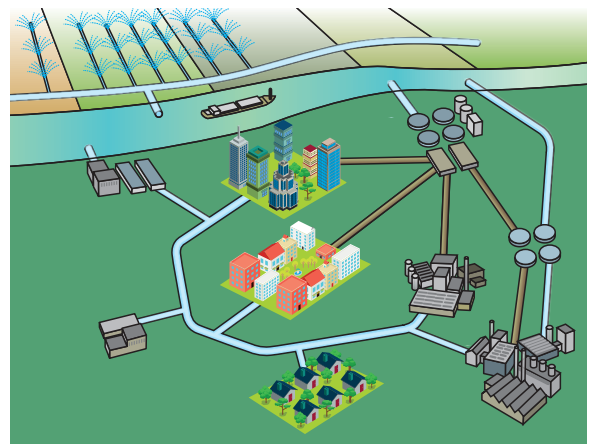
GPRS Wireless Remote  
Transmission

## Low-power wireless NB-IOT meter reading

The narrowband IoT technology NB-IOT provides a new wireless communication solution for Pangu LXE series electromagnetic water meters. NB-IOT have features of low power consumption, wide coverage and large data transmission, ensuring that LXE series electromagnetic water can transmit large amounts of data over long periods of time to save power and extend the service life. LXE series electromagnetic water meter can connect to an external IP68 protection level GPRS wireless backpack through RS485 communication to realize real-time monitoring of flow pressure data.

## Flow pressure integration, Partition Measurement (DMA)

According to the current domestic water company, the actual needs of large users should be designed specially. Increasing the real-time monitoring of pipe network pressure on the basis of wireless remote transmission. Providing information for the information construction of water supply enterprises (SCADA, GIS, modeling, hydraulic model, scientific scheduling), is the best choice for partition metering (DMA) and large-scale measurement. Can realize flow measurement monitoring, pipe network pressure leak detection and wireless meter reading at the same time.



# Product application introduction

## 1. Small meter, large flow

Some old users who used small pipe and meters, but now the water supply increased, the meter is too small to bear the large flow.

If the mechanical water meter is operated in a high area for a long time, it will be heavily worn, which will cause a large negative deviation and bring a large water loss to the water supply company.

The LXE series electromagnetic water meter has a straight-through structure, not have movable mechanical parts, will not cause wear, no error in any flow area, ensure the measurement accuracy.

## 2. Large meter, small flow

Special users (such as swimming pools) have less time for large water consumption, while it is small flow under usual time, so the meter will be too large for the small flow.

The mechanical water meter will take a large loss due to the high initial flow rate and large negative deviation below Q1.

The LXE electromagnetic water meter has a very low initial flow rate (5mm/s), and it can keep a good measurement accuracy below Q1.

## 3. Low requirement for straight pipe

According to the national verification regulation (JJG162-2009) for cold water meter, it must be installed correctly to ensure accurate metering.

The installation of the mechanical water meter should ensure that the front straight pipe section need 10D and the rear straight pipe section need 5D (D is the nominal diameter of the water meter), otherwise it will easily generate turbulence and eddy current, causing metering deviation of measurement.

The LXE series electromagnetic water meter determines the instantaneous flow rate by measuring the flow rate of the entire cross section.

That's the advantage of this metering principle. In the case of ensuring accurate measuring, it only need the straight pipe section of front 5D and 3D of the behind. It is more suitable for installations where there is lack straight pipe section length.

## 4. High tolerance for water quality

When the water meter is installed and repaired in the water supply pipe network, the mud, hemp and other debris will be left in the pipe network. When the sundries pass through the water meter filter, the water meter impeller is easily entangled and squeezed, causing the impeller and the gear separated or get stuck, then the meter number will be biased, which may lead to billing disputes with users.

For the LXE series electromagnetic water meter, due to its measurement principle, the internal is a straight-through structure, and there is no movable mechanical part, so it has high tolerance for water quality of the water supply pipe network. This characteristic of the LXE series electromagnetic water meter makes it possible to operate normally in a pipe network with poor water quality and low water pressure.





## 5. Reduce the loss and the cost of changing new meter

When the mechanical water meter is in operation, the impeller rotates with the tip rub frequently, it causes the tip severe wear. But the tip is an important component for supporting the rotation of the impeller in the water meter, the severe wear of the tip causes the frictional resistance between the tip and the impeller to increase, and the meter measuring is biased. Therefore, the mechanical water meter must ensure high-precision metering, and the water meter needs to be replaced regularly, otherwise it will increase the difference between production and sale. The straight-through structure of LXE series electromagnetic water meter has no internal movable parts and almost no wear and tear, which can greatly reduce the difference in production and sales of water supply users.

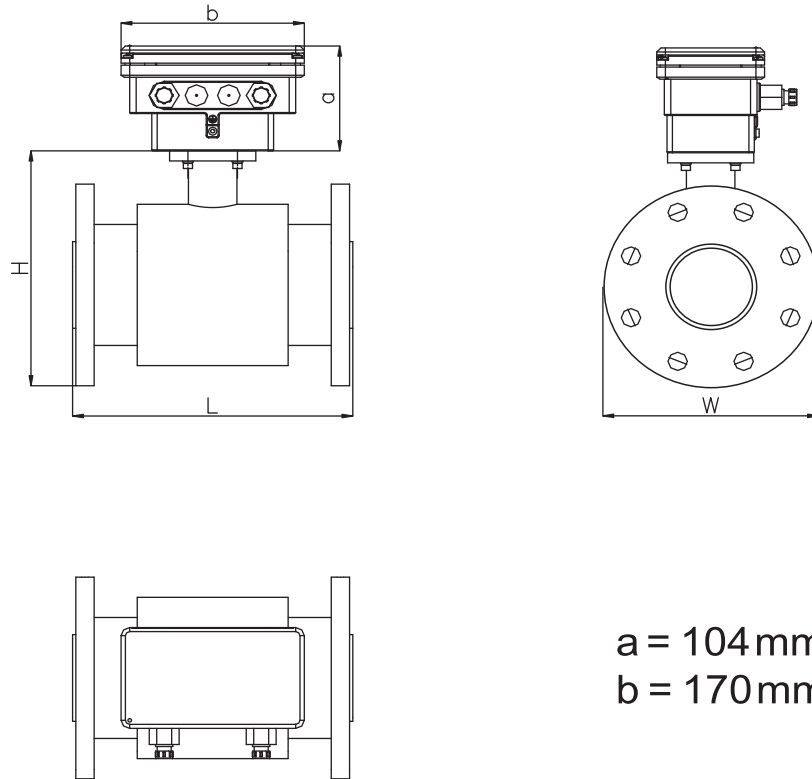
## 6. Reading Directly and Remote Transmission--Measure small flow at night in the DMA area

Compared with the pulse output of a conventional mechanical water meter, the remote transmission of the LXE series electromagnetic water meter can read the digital directly. This data transmission method not only avoids the risk of pulse loss, but also ensures that the field data can be accurately synchronized with the server. And, the NMF measured by the mechanical water meter is generally the average flow rate in the cycle time period, while the LXE series electromagnetic water meter measures the actual instantaneous flow rate of the water pipe. And the higher range ratio makes the water meter simultaneously accurate metering of nighttime minimum flow (NMF) and daytime peak flow.

## LXE series electromagnetic water meter Option Table

Section Example: LXE-80J1M1D2/C3/SP						
LXE electromagnetic water meter, DN80, Class 1 accuracy for range ratio 250 according to GB/T778-2007 water meter standard, with stainless steel 304 body, with stainless steel flange (including bolts and nuts), with RS485 communication, internal pressure sensor.						
Models	Suffix code				Function Code	Instruction
LXE-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Nominal Diameter	80					DN50, DN80, DN100, DN150, DN200, DN250, DN300
Measurement Accuracy	J1					Level 1 R250 (Q2/Q1=1.6)
	J2					Level 2 R400 (Q2/Q1=1.6)
Body material (including flange, protective case)						Carbon steel
	M1					304 stainless steel
Mounting matching flange						No flange
	D1					carbon steel flange (including bolts and nuts)
	D2					Stainless steel flange (including bolts and nuts)
Function Code	/C <input type="checkbox"/>		3	RS485 Data Output		
			B8	NB-IOT Communication module, 900MHz, China Mobile		
	/SP		Pressure sensor			
LXE series electromagnetic water meter Types	Standard Type		Remote Transmission & Monitoring Type	Flow & Pressure Remote Transmission Type	RS485 Data Output Type	
						
	Instantaneous flow, cumulative flow		Instantaneous flow, cumulative flow	Instantaneous flow, cumulative flow, pressure	Instantaneous flow, cumulative flow	
	Pressure Range		1.0Mpa			
	Installation Method		Pipe type (flange connection) A1			
Flow measurement	Two-way measurement, showing flow direction, instantaneous flow, instantaneous flow rate, positive and negative cumulative flow, net flow					
Medium conductivity	Fluid conductivity $\geq 50 \mu\text{s/cm}$					
Temperature	Medium: $0^{\circ}\text{C} - +50^{\circ}\text{C}$ Environment : $-20^{\circ}\text{C} - +60^{\circ}\text{C}$					
Level of Protection	IP68					
Battery	Internal lithium-ion battery (working time exceeds 5+1 years)					
Diagnostic and alarm performance	Empt: sensor empty tube Pls: Pulse output frequency exceeds the set frequency upper limit AD_Hi: The sensor signal is greater than the upper limit of the system AD sampling Rng: The current instantaneous flow exceeds the user-defined flow limit. Rng_Hi: The range set by the user exceeds the upper limit of the system AD sampling. Pls_Hi: The range set by the user exceeds the pulse output limit					
Display and Control	The three lines of the screen display, the first line of 12-bit (integer plus decimal) cumulative flow display to meet the long-term use for large water users. The second and third lines are 5-bit instantaneous flow rate and 5-bit instantaneous flow rate display respectively. The number of decimal places can be adjusted manually. The battery power and fault diagnosis alarm are also showed on the left side, to ensure the error can be detected and eliminated in time. Can display the pressure value.					
Signal output	Wireless remote transmission: integrated NBIOT or external GPRS wireless backpack remote transmission, data is packaged to sent Digital signal: MODBUSRTU serial interface, up to 32 devices, RS485 communication					

## LXE Series Size and Weight



a = 104 mm  
b = 170 mm

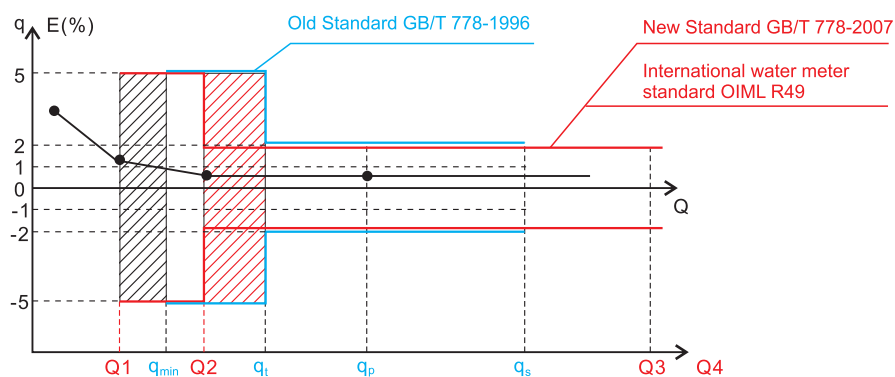
DN[mm]	Size[mm]		
	L	H	W
50	200	195	165
80	250/200	200	200
100	250	220	220
150	300	285	285
200	350	340	340
250	450	390	390
300	500	445	445

**Pangu LXE series electromagnetic water meter size meets the standard of GB/T 778-2007 new water meter size standard**



## GB/T778-2007 new water meter standard, level 1 accuracy R250, level 2 R400 flow parameters

Nominal Diameter	DN	mm	DN50	DN80	DN100	DN150	DN200	DN250	DN300
		inch	2	3	4	6	8	10	12
	Q2/Q1		1.6	1.6	1.6	1.6	1.6	1.6	1.6
Range Ratio	Q3/Q1		400	250/400	250/400	250/400	250/400	250/400	250/400
Minimal Flow	Q1	m <sup>3</sup> /h	0.1	0.4/0.25	0.63/0.4	1.6/1.0	2.56/1.6	4.0/2.5	6.4/4.0
Demarcation flow	Q2	m <sup>3</sup> /h	0.16	0.63/0.4	1.0/0.64	2.56/1.6	4.0/2.56	6.4/4.0	10.24/6.4
Demarcation flow	Q3	m <sup>3</sup> /h	40(16)	100(40)	160(63)	400(160)	630(250)	1000(400)	1600(630)
Overload flow	Q4	m <sup>3</sup> /h	50	125	200	500	788	1250	2000
Pressure loss grade			△p63	△p63	△p63	△p63	△p63	△p63	△p63
Temperature class			T50	T50	T50	T50	T50	T50	T50
Accuracy level	Accuracy Level 1-R250, Accuracy Level 2-R400								
Minimum medium Conductivity	≥50 μs/cm								
Protection level	IP68 (Can be completely submerged in the instrument well)								
Battery Life	More than 5+1 year (under normal condition)								
Signal Output	RS485, NB-IOT, GPRS								



Class 2 (new standard) and Class B (old standard) Comparison chart

Please pay special attention to the verification operation:

1. The verification method of the LXE series electromagnetic water meter standard is the pulse output method. This method should be used when conditions are met to reduce the measurement uncertainty;
2. The same as the mechanical water meter, the dynamic manual reading method is adopted, but the length of the verification time should be appropriately increased to eliminate the error in the manual reading;
3. When the electromagnetic interference of the environmental is large, it will cause small flow deviation, and should be grounded and zero-point adjustment;
4. When the large flow of the verification device does not reach the standard flow of Q3, the value in parentheses (old standard rated flow value) can be used for verification. Since the electromagnetic water meter is linear, the effect is the same.



**HANGZHOU PANGU AUTOMATION SYSTEM CO.,LTD**

Add : 3D-602, Xigangxinjie, 206 Zhenhua Road, Xihu District, Hangzhou, China

Tel : 86-571-87770817

Fax : 86-571-87770820

E-mail : [hzpg@vip.163.com](mailto:hzpg@vip.163.com)

Website : [www.pangu.com.cn/en/index.html](http://www.pangu.com.cn/en/index.html)

2018