

## Introduction


### 1. MTVMFB-S series electromagnetic water meter

#### 1.1. Description of features

Overall performance:

- ◆ Easy installation, high overall protection level (IP68);
- ◆ Battery life: The service life can reach 6 years;
- ◆ Range ratio: R = 160, 250;
- ◆ Ultra-low starting flow rate;
- ◆ High measurement accuracy, stable long-term measurement performance, maintenance-free;
- ◆ It can measure the flow in both positive and negative directions;
- ◆ The electromagnetic water meter sensor can be equipped with a pressure sensor to monitor the pressure of the installation point pipeline and can be transmitted remotely to the system.
- ◆ Internally powered by 3.6V high-energy lithium battery, no need for external power supply, no need for external settings, convenient to use, and the range of use is extremely wide
- ◆ The shell is made of full stainless steel (carbon steel optional);
- ◆ Multiple communication solutions to choose from: RS485 communication, wireless remote transmission (GPRS, NB-IoT); Remote collection and monitoring of measurement information and alarm information of water meters, providing maximum convenience for customers;
- ◆ The converter has a series of self-diagnosis functions, such as electrode scaling, sensor leakage, empty tube alarm, low battery alarm, etc. Users can monitor the status of the water meter in real time;
- ◆ Data protection: Instrument parameters and measurement data are stored in non-volatile memory (can be stored for more than 10 years). The instrument has mechanical and electronic seals to effectively prevent unauthorized modification of parameters.

#### 1.2. Technical parameters

MTVMFB-S Series Electromagnetic Water Meter		
implementation standard	GB/T778-2018, JJG162-2009	
accuracy level	2 Level	1 Level
caliber	DN40~DN300	DN40~DN300
installation mode	Pipeline type (flange connection)	
Flange Standard	GB/T9119	
pressure level	1.0 MPa, others	
Liner material	PU	
electrode material	316L	
electrical conductivity	≥20 μs/cm	
Protection level	IP68	
temperature class	T50	
medium temperature	0°C~50°C	
Climate Mechanical Environmental Category	Class C	
Electromagnetic environment level	E2	
embedability	Buried depth ≤5m (IP68 only)	
electrical connection	high protection aviation plug	
split cable	≤10M	
Power supply	3.6V lithium battery, 220V AC+3.6V lithium battery, 24V DC+3.6V lithium battery	
output interface	Pulse (standard), RS485 (standard), GPRS, NB-IoT	

MTVMFB-S series electromagnetic

water meter flow parameter

table: accuracy level 1 flow

parameters

caliber (mm)	Q <sub>4</sub> (m <sup>3</sup> /h)	Q <sub>3</sub> (m <sup>3</sup> /h)	Q <sub>2</sub> (m <sup>3</sup> /h)	Q (m <sup>3</sup> /h)	R (Q <sub>3</sub> / Q <sub>1</sub> )
R160 Series					
40	31.25	25	0.25	0.16	160
50	50	40	0.4	0.25	160
65	78.75	63	0.63	0.4	160
80	125	100	1	0.63	160
100	200	160	1.6	1	160
125	312.5	250	2.5	1.6	160
150	500	400	4	2.5	160
200	787.5	630	6.3	4	160
250	1250	1000	10	6.3	160
300	2000	1600	16	10	160
Q1 to Q2: The error is less than or equal to 3% RQ2 to Q4: The error is less than or equal to 1% R					

accuracy level 2 flow parameters

caliber (mm)	Q (m <sup>3</sup> /h)	Q <sub>3</sub> (m <sup>3</sup> /h)	Q <sub>2</sub> (m <sup>3</sup> /h)	Q <sub>1</sub> (m <sup>3</sup> /h)	R (Q <sub>3</sub> / Q <sub>1</sub> )
R160 Series					
40	31.25	25	0.25	0.16	160
50	50	40	0.4	0.25	160
65	78.75	63	0.63	0.4	160
80	125	100	1	0.63	160
100	200	160	1.6	1	160
125	312.5	250	2.5	1.6	160
150	500	400	4	2.5	160
200	787.5	630	6.3	4	160
250	1250	1000	10	6.3	160
300	2000	1600	16	10	160
Q1 to Q2: The error is less than or equal to 5% RQ2~Q4: The error is less than or equal to 2%R					
R250 Series					
40	31.25	25	0.16	0.1	250
50	50	40	0.25	0.16	250
65	78.75	63	0.4	0.25	250
80	125	100	0.63	0.4	250
100	200	160	1	0.63	250
125	312.5	250	1.6	1	250
150	500	400	2.5	1.6	250
200	787.5	630	4	2.5	250
250	1250	1000	6.3	4	250
300	2000	1600	10	6.3	250
Q1 to Q2: The error is less than or equal to 5% RQ2~Q4: The error is less than or equal to 2%R					


## 2 MTVMFB-K series electromagnetic water meter

### 2.1 1.

#### Introduction to the Overall Performance:

- ◆ Easy installation, high overall protection level (IP68);
- ◆ Battery life: The service life can reach more than 10 years;
- ◆ Range ratio: The R value can meet the requirements of R150/R250/R400, with a maximum of 630.
- ◆ Ultra-low starting flow rate;
- ◆ Low requirements for installation environment, can be installed in zero straight pipe sections to ensure measurement accuracy;
- ◆ High measurement accuracy, stable long-term measurement performance, maintenance-free;
- ◆ It can measure the flow in both positive and negative directions;
- ◆ The electromagnetic water meter sensor can be equipped with a pressure sensor to monitor the pressure of the installation point pipeline and can be transmitted remotely to the system.
- ◆ Internally powered by a 3.6V high-energy lithium battery, no need for external power supply or external settings, convenient to use, and extremely wide range of applications;
- ◆ The shell is made of full stainless steel (carbon steel optional);
- ◆ Multiple communication solutions to choose from: RS485 communication, wireless remote transmission (GPRS, NB-IoT), Bluetooth; Remote collection and monitoring of water meter measurement information and alarm information, providing maximum convenience for customers.
- ◆ The converter has a series of self-diagnosis functions, such as electrode scaling, sensor leakage, empty tube alarm, low battery alarm, etc. Users can monitor the status of the water meter in real time;
- ◆ Data protection: The instrument parameters and measurement data are stored in non-volatile memory (can be stored for more than 10 years). The instrument has mechanical and electronic seals to effectively prevent unauthorized modification of parameters.

## 2.2 technical parameters

MTVMFB-K Series Electromagnetic water meter		
implementation standard	GB/T778-2018, JJG162-2009	
accuracy level	2 Level	1 Level
caliber	DN50~DN300	DN50~DN300
installation mode	Pipeline type (flange connection)	
Flange Standard	GB/T9119	
pressure level	1.0 MPa, others	
Liner material	PU	
electrode material	316L	
electrical conductivity	≥20 μs/cm	
Start the flow rate	≥3mm/s	
Protection level	IP68	
temperature class	T50	
medium temperature	0°C~50°C	
Climate and Mechanical Environmental Category	Class C	
Electromagnetic environment level	E2	
embedability	Buried depth ≤5m (IP68 only)	
electrical connection	Protection high protection aviation plug	
split cable	≤10M	
Power supply	3.6V lithium battery, 220V AC+3.6V lithium battery, 24V DC+3.6V lithium battery	
output interface	Pulse (standard), RS485 (standard), GPRS, NB-IoT	

**MTVMFB-K series**

**electromagnetic water meter**

**flow parameter table: accuracy**

**level 1 flow parameters**

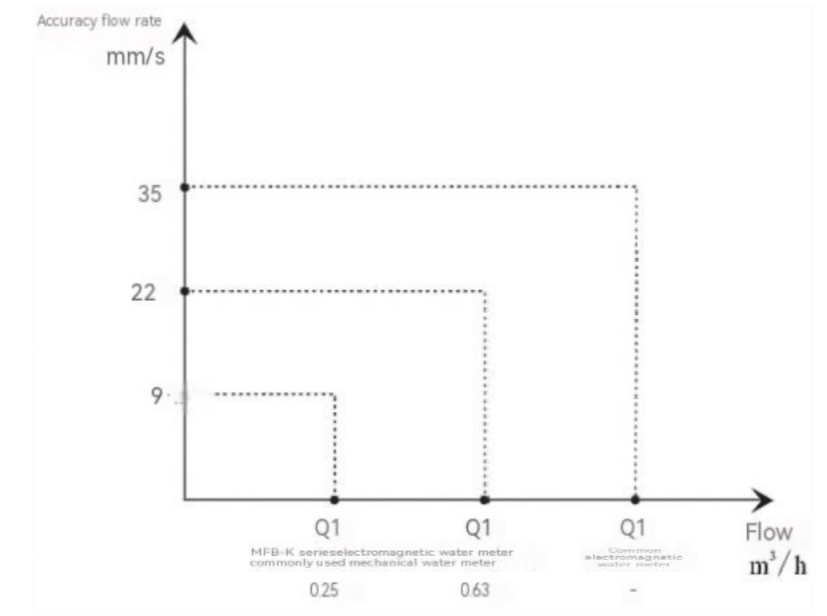
caliber (mm)	Q <sub>4</sub> (m <sup>3</sup> /h)	Q <sub>3</sub> (m <sup>3</sup> /h)	Q <sub>2</sub> (m <sup>3</sup> /h)	Q (m <sup>3</sup> /h)	Q value accuracy flow rate (mm/s)	R (Q <sub>3</sub> /Q <sub>1</sub> )
<b>R160 Series</b>						
50	50	40	0.4	0.25	35	160
80	125	100	1	0.63	35	160
100	200	160	1.6	1	35	160
150	500	400	4	2.5	40	160
200	787.5	630	0.63	4	35	160
250	1250	1000	10	6.3	36	160
300	2000	1600	16	10	39	160
Q1 to Q2: Error ≤3%R Q2~Q4: The error is less than or equal to 1% R						
<b>R250 Series</b>						
50	50	40	0.25	0.16	23	250
80	125	100	0.63	0.4	22	250
100	200	160	1	0.63	22	250
150	500	400	2.5	1.6	25	250
200	787.5	630	4	2.5	22	250
250	1250	1000	6.3	4	23	250
300	2000	1600	10	6.3	25	250
Q1 to Q2: Error ≤3%R Q2~Q4: The error is less than or equal to 1% R						
<b>R400 Series</b>						
50	50	40	0.16	0.1	14	400
80	125	100	0.4	0.25	14	400

100	200	160	0.63	0.4	14	400
150	500	400	1.6	1	16	400
200	787.5	630	2.5	1.6	14	400
250	1250	1000	4	2.5	14	400
300	2000	1600	6.3	4	16	400
Q1 to Q2: Error ≤3%R Q2~Q4: The error is less than or equal to 1% R						

**accuracy level 2 flow parameters**

caliber (mm)	Q <sub>4</sub> (m <sup>3</sup> /h)	Q <sub>3</sub> (m <sup>3</sup> /h)	Q <sub>2</sub> (m <sup>3</sup> /h)	Q <sub>1</sub> (m <sup>3</sup> /h)	Q value accuracy flow rate (mm/s)	R (Q <sub>3</sub> / Q <sub>1</sub> )
R160 Series						
50	50	40	0.4	0.25	35	160
80	125	100	1	0.63	35	160
100	200	160	1.6	1	35	160
150	500	400	4	2.5	40	160
200	787.5	630	0.63	4	35	160
250	1250	1000	10	6.3	36	160
300	2000	1600	16	10	39	160
Q1 to Q2: Error ≤ 5% R Q2~Q4: The error is less than or equal to 2%R						
R250 Series						
50	50	40	0.25	0.16	23	250
80	125	100	0.63	0.4	22	250
100	200	160	1	0.63	22	250
150	500	400	2.5	1.6	25	250
200	787.5	630	4	2.5	22	250
250	1250	1000	6.3	4	23	250
300	2000	1600	10	6.3	25	250
Q1 to Q2: Error ≤ 5% R Q2~Q4: The error is less than or equal to 2%R						

caliber (mm)	Q <sub>4</sub> (m <sup>3</sup> /h)	Q <sub>3</sub> (m <sup>3</sup> /h)	Q <sub>2</sub> (m <sup>3</sup> /h)	Q (m <sup>3</sup> /h)	Q, value accuracy flow rate (mm/s)	R (Q <sub>3</sub> /Q <sub>1</sub> )
<b>R400 Series</b>						
50	50	40	0.16	0.1	14	400
80	125	100	0.4	0.25	14	400
100	200	160	0.63	0.4	14	400
150	500	400	1.6	1	16	400
200	787.5	630	2.5	1.6	14	400
250	1250	1000	4	2.5	14	400
300	2000	1600	6.3	4	16	400
Q1 to Q2: Error ≤ 5% R Q2~Q4: The error is less than or equal to 2%R						
<b>R630 Series</b>						
50	50	40	0.1	0.063	9	630
80	125	100	0.25	0.16	9	630
100	200	160	0.4	0.25	9	630
150	500	400	1	0.63	10	630
200	787.5	630	1.6	1	9	630
250	1250	1000	2.5	1.6	9	630
300	2000	1600	4	2.5	10	630
Q1 to Q2: Error ≤ 5% R Q2~Q4: The error is less than or equal to 2%R						

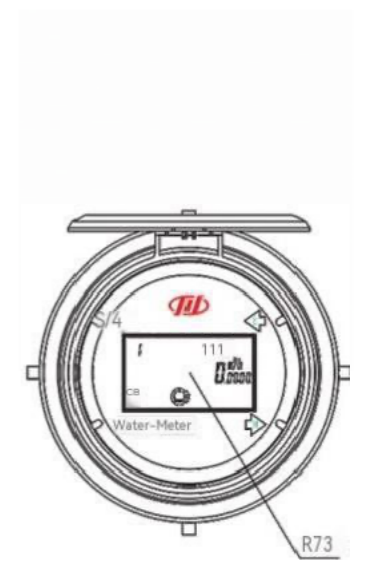
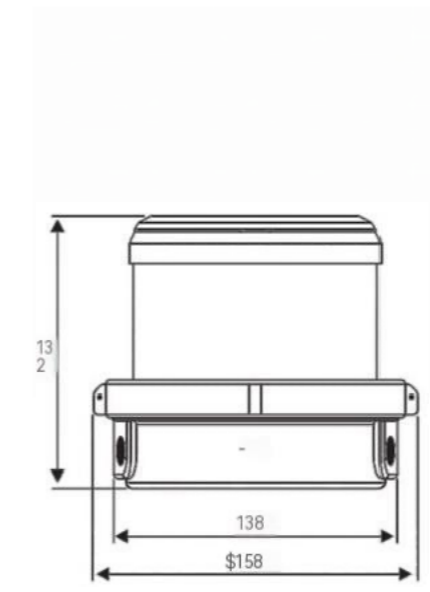
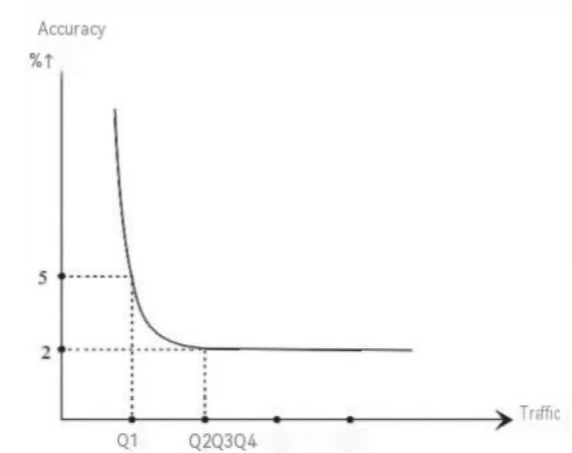


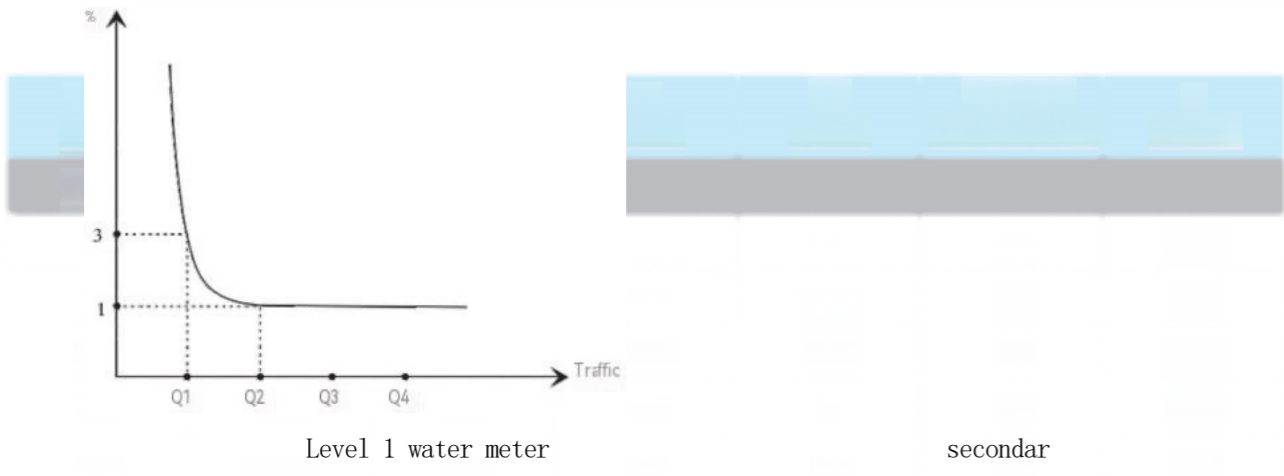
The accuracy of the Q1 value of the three ...

4 The size of the ...

3. Accurate curve

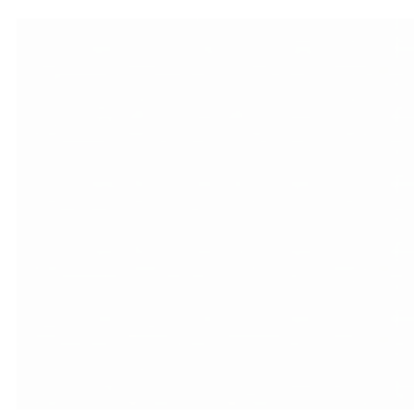
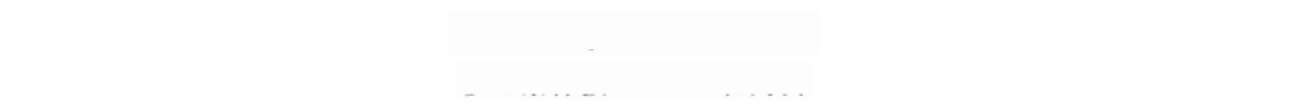
accuracy





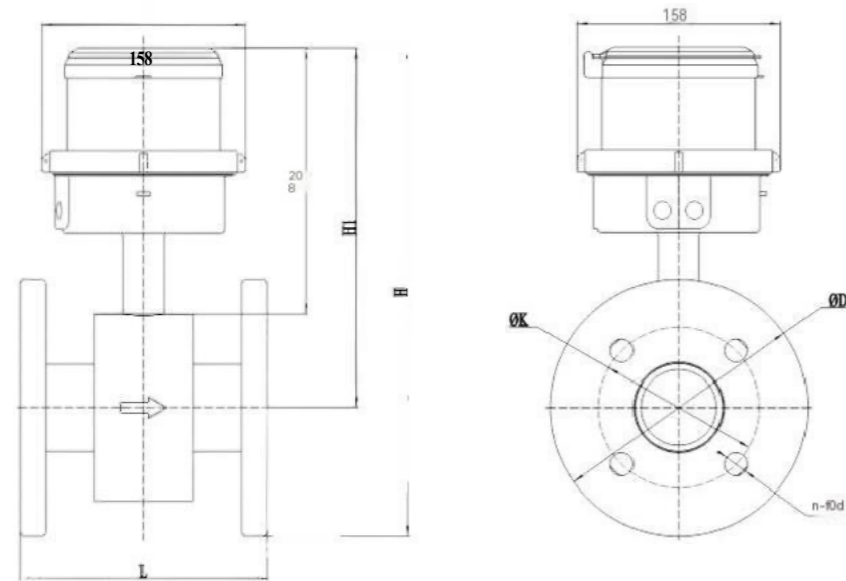
Level 1 water meter

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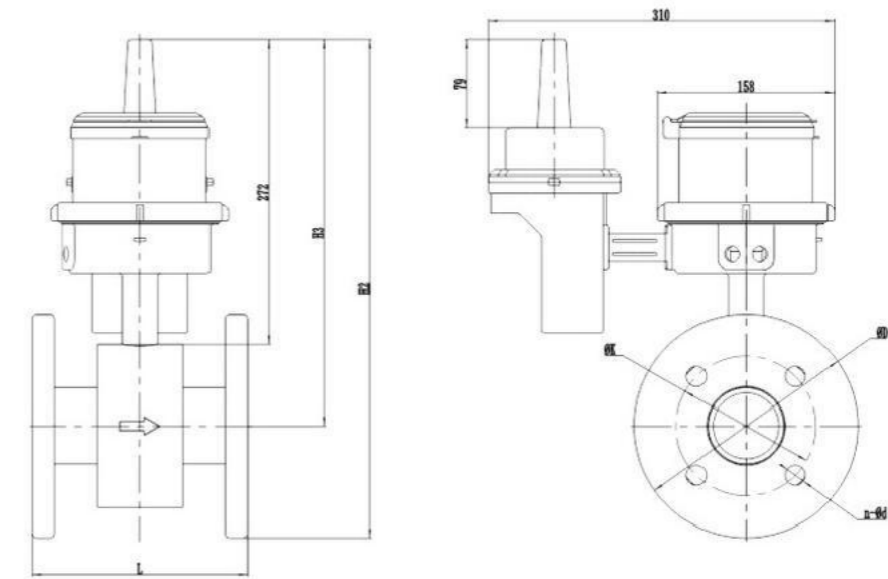
5. External dimensions of the electromagnetic water meter

5.1 Electromagnetic water meter with RS485 communication



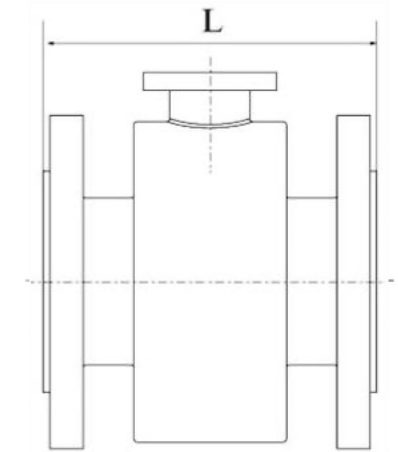
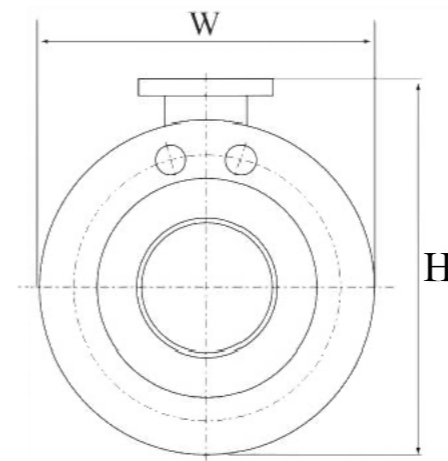
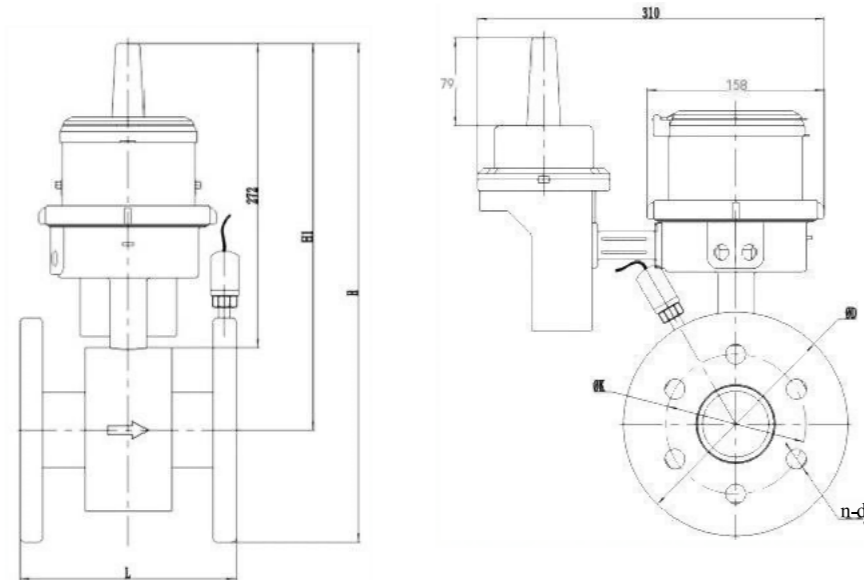
DN	H	H1	L	D	K	n-φ d
40	335	260	200	150	110	4-p18
50	354	271	200	165	125	4-φ 18
65	369	276.5	200	185	145	4-φ 18
80	377	277	200	200	160	8-φ 18
100	400	290	250	220	180	8-p18
125	421	296	250	250	210	8-φ 18
150	446	303	300	285	240	8-φ 22
200	479	321	350	315	270	8-φ 22
250	549	351	450	395	350	12-φ 22
300	612	389	500	445	400	12-φ 22

5.2 Electromagnetic water meter with GPRS wireless remote transmission



DN	H2	H3	L	D	K	n-φ d
40	399	324	200	150	110	4-p18
50	418	335	200	165	125	4-18
65	433	341	200	185	145	4-φ 18
80	441	341	200	200	160	8-φ 18
100	462	352	250	220	180	8-Q018
125	485	360	250	250	210	8-Q18
150	510	367	300	285	240	8-p22
200	543	385	350	315	270	8-Q22
250	613	415	450	395	350	12-p22
300	676	453	500	445	400	12-p22

5.3 Electromagnetic water meter with GPRS wireless remote transmission and pressure measurement 5.4 Electromagnetic water meter split sensor external dimensions



DN	H	H1	L	D	K	n-φ d
40	399	324	200	150	110	4-φ 18
50	418	335	200	165	125	4-φ 18
65	433	341	200	185	145	4-φ 18
80	441	341	200	200	160	8-φ 18
100	462	352	250	220	180	8-φ 18
125	485	360	250	250	210	8-φ 18
150	510	367	300	285	240	8-φ 22
200	543	385	350	315	270	8-φ 22
250	613	415	450	395	350	12-φ 22
300	676	453	500	445	400	12-φ 22

caliber (mm)	size (mm)			Weight (kg)			
	L	W	H	1.0MPa	1.6MPa	2.5MPa	4.0MPa
40	200	128	165	7.5	7.5	8	8.5
50	200	165	187	9	9	9.5	10
65	200	185	202	11	11	12	14
80	200	200	223	14	14	15	19
100	250	220	249	19	19	20	24
125	250	250	278	24	24	25	30
150	300	28	303	32	32	35	42
200	350	340	358	41	41	46	56.5
250	450	405	418	68	68	73	85
300	500	400	400	80	80	85	110

## 6. Electromagnetic water meter selection table

The MTVMFB-S electromagnetic water meter consists of three parts: sensor, converter, and accessories. The model is represented as follows:

	Sensor Converter	accessories
main name	MTVMFB-XXX X District X District X District X District X	X
type		
caliber	The expression mode is three digits, the first two digits are the first and second of the caliber Digits. The third digit is the number of 0s in the unit of mm. Caliber range: DN40-DN300	
pressure level	1 1. 1.6MPa 5, 1.0MPa 6, 0.6MPa	
Sensor material	1 carbon steel 2, stainless steel	
form	WH: integrated WR: split type	
Power supply	3: 220VAC+3.6 Lithium battery 4: 3.6V Lithium battery 5:24V DC+3.6V Lithium battery	
accuracy level	1 1, level 2,	
level 2 range		
ratio	1 R1602 and R250 pressure detection	
with output	0, without 1,	
signal	0 2. No output 2. RS485 output (standard 1.5m cable) 7. Battery-powered GPRS wireless remote transmission 8 Battery-powered NB-IoT wireless remote transmission (mobile) 9. Battery-powered NB-IoT wireless remote transmission (telecom)	
wireless form	0 1. No. 1. Built-in. 2.	
External SIM card configuration mode	0 1. Without 1. Standard configuration. 2. Provide by the customer	
split cable length	/LXX (The specific length of XX must be written, which is less than or equal to 10 meters.)	
grounding ring	/ R, yes	
paired Flan	/F1, carbon steel flange + carbon steel fasteners /F2, stainless steel flange + stainless steel fasteners	

Note: The output signal is equipped with pulse, and the SIM card that is equipped with the factory is charged by our company. The accessories that are not selected are not reflected in the model spectrum.

For example, 1: MFB-S10151WR4210200/L10

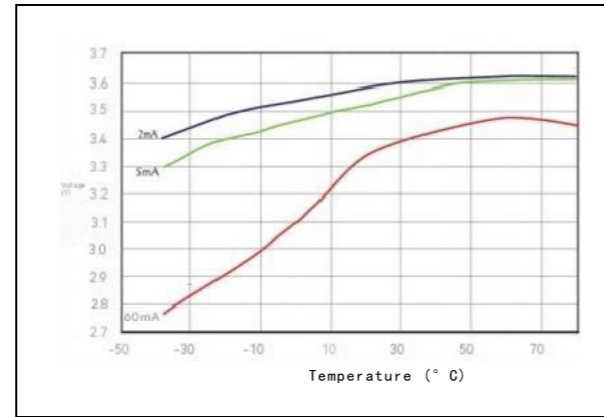
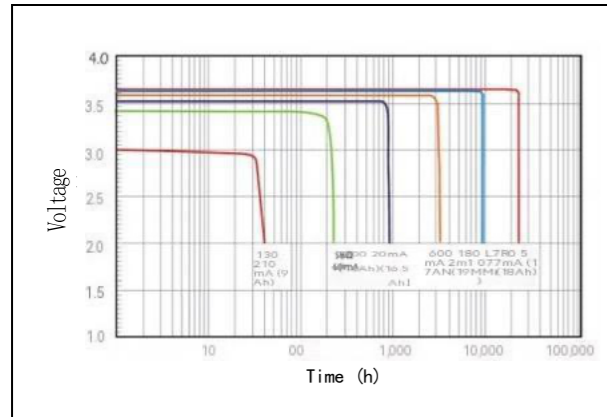
Note: Chongqing Chuanyi electromagnetic cold water meter, type S, caliber 100, 1.0 MPa, sensor material is carbon steel, split type, power supply 3.6V battery, accuracy level 2, range ratio R160, no pressure detection, output signal RS485, No antenna or SIM card is provided. The split cable is 10 meters long.

Example 2: MFB-S20152WH4221721

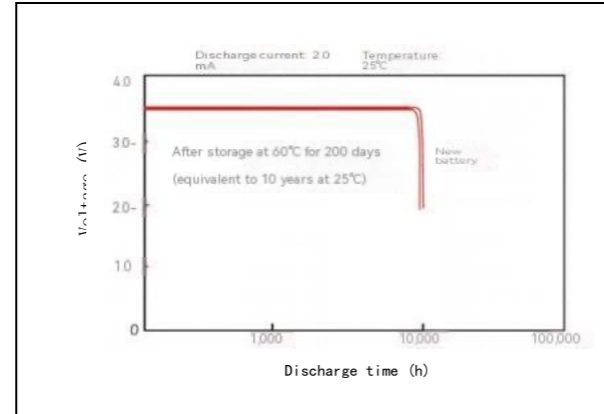
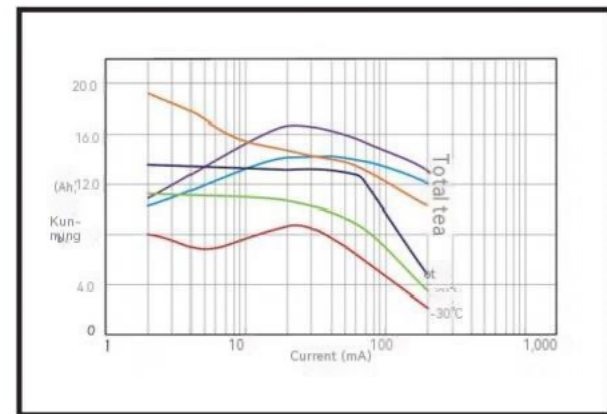
Note: Chongqing Chuanyi electromagnetic cold water meter, type S, caliber DN200, 1.0MPa, sensor material is stainless steel, integrated, power supply 3.6V battery, accuracy level 2, range ratio R250, with pressure detection. The output signal is battery-powered GPRS wireless remote transmission, with an external antenna and a standard SIM card.

## 7 Lithium battery technical characteristics

2. Stable voltage curve under different discharge current and temperature conditions  
 1 Typical discharge curve at +25° C (middle value)  
 (in the stable)



3. Capacitance curves under different temperature and current conditions  
 (The cut-off voltage is 2.0V)  
 4 Storage







As can be seen from the above pictures, the battery life will decrease under sunlight, so try to minimize direct sunlight during installation

### Battery usage instructions:

The battery life is influenced by temperature. When the ambient temperature is 25 ° C, the MTVMFBS electromagnetic cold water meter can guarantee a service life of more than 6 years. However, under harsh environmental conditions (high or low temperature), the battery capacity will be reduced, and the service life will be less than 6 years.

### Description of battery power changes:

	Power level greater than 75%
	Power level greater than 50%
	Power level greater than 25%
	The battery is running out. Please replace it in time

Note: When the instrument displays the symbol "☉," it indicates that the battery power is insufficient and needs to be replaced, otherwise, the measurement data will be lost. When replacing the battery, it must be operated by a professional who has been guided by the manufacturer, or the product must be sent back to the manufacturer for replacement. After replacing the battery, The instrument stores: Accumulated traffic and accumulated effective running time are not lost.

### Precautions:

1. This product is a precision measuring instrument, please be operated by professionals.
2. About the battery:
  - ★ Do not charge, short-circuit, or modify the battery.
  - ★ Do not overheat or solder the battery.
  - ★ Do not place the battery near the flame.
  - ★ Do not subject the battery to violent physical impact.
  - ★ The battery of this product has been professionally processed. Do not replace it with other batteries of the same model.
  - ★ If the battery is insufficient, replace the battery in time. Otherwise, the measurement data will be lost.
  - ★ Use tape to insulate the battery to avoid contact with other metal objects or batteries to prevent fire or explosion.
  - ★ The waste batteries replaced should be treated in the environment or handed over to our factory for recycling.
  - ★ If the battery leaks, changes color, deforms, smokes, or smells, remove it immediately.
  - ★ Do not let the leaked battery come into contact with eyes, skin, or clothing. If the leaked battery comes into contact with eyes, skin, or clothing, rinse immediately with plenty of water (do not rub) and seek medical attention.
3. Do not change the length of any cable, as it may affect product performance.
4. Do not place any cable of this product near a heat source to avoid damage to the insulation layer due to thermal deformation, which may cause fire or electric shock accidents.
5. Any exposed threaded parts of the product may cause skin scratches, please handle with care.
6. Our company's wireless remote meter reading system uses GPRS or NB-IoT communication methods. Please comply with local laws and regulations when using it.
7. Try to avoid using in acidic environments and environments with excessive salt spray, otherwise it will accelerate the aging of product materials and cause the product to fail to meet hygiene standards.
8. If the product requires a grounding cable, see the installation instructions for grounding in the appendix.
9. This product is a precision measuring instrument. Do not drop it or subject it to impact.
10. Avoid direct sunlight on the display panel of the instrument for a long time.

# Pipeline type

## 1 Product Description

### 1.1 Product range

The electromagnetic flowmeter is composed of a sensor and a converter, and works based on Faraday's law of electromagnetic induction. It is used to measure conductive liquids or liquid-solid two-phase media. It is required that the conductivity should generally be greater than  $5\mu\text{S}/\text{cm}$  (the conductivity of tap water and raw water is about  $100\mu\text{S}/\text{cm}\sim 500\mu\text{S}/\text{cm}$ ), and can be used to measure various acids, alkalis, salt solutions, pulp, pulp, and other media. However, the medium cannot contain a large amount of ferromagnetic materials and a large number of bubbles.

### 1.2 instrument features

1 There are no obstructive flow or moving parts inside the measuring tube, so it will not cause additional energy loss or blockage. It has significant energy-saving effects and is particularly suitable for measuring liquid-solid two-phase flows such as sewage, slurry, slurry, coal-water slurry, pulp, etc.

2 1) Only the lining and electrode come into contact with the measured medium. As long as the lining and electrode materials are selected reasonably, good corrosion resistance and wear resistance can be achieved. Therefore, it can measure various strong acids, strong alkalis, and other chemical solutions.

3 2) Low installation requirements, the front straight pipe section only needs  $5D$ , and the rear straight pipe section is  $2D$  ( $D$  is the inner diameter of the selected instrument).

4 1) High measurement accuracy, up to  $\pm 0.2\%$  of the indicated value, and can measure flow in both forward and reverse directions.

5 The instrument adopts a dual-frequency excitation method, which is not affected by the power frequency and operates stably and reliably.

6 2) The instrument has low power consumption, less than  $20\text{VA}$ .

7 2) The converter has good interchangeability and can achieve accuracy without the need for real-flow calibration.

8-Wide measurement range, up to  $1500:1$ .

9 1) After the pipeline is empty, it automatically detects and sets the data to zero and alarms to prevent the flowmeter data from jumping randomly and causing misoperation due to the interference of the empty pipe.

10 2) The electrode seal adopts a unique conical surface seal and line seal dual sealing method to ensure no leakage.

11 2) The input impedance of the converter is greater than  $10^{12}$  ohms, effectively preventing the influence of scaling on the sensor and suitable for measuring low conductivity media.

12 The EMC (Electromagnetic Compatibility) index of the flowmeter meets the requirements of the IEC61000-1995 standard.



Due to the series of advantages of electromagnetic flowmeters, they are increasingly widely used in various industries and have become the preferred instrument for liquid flow measurement.

### 1.3 Ordering Notice

Please read this document before placing an order, understand the model and coding regulations of this product, and determine the model specifications as needed. If necessary, please also indicate the following requirements:

- 1) The parameters set before the product leaves the factory, such as the upper limit of the flow range or the corresponding upper limit of the flow rate, etc.;
- 2) Whether it is required to provide matching flanges for installation;
- 3-Whether there are immersion requirements;
- 4 Other special requirements, etc.

## 2 Main technical parameters

FlowMaster MTVMFE-S type electromagnetic flowmeter		
	integrated body	split type
basic error	$\pm 0.2\%$ or $\pm 0.5\%$ of the indicated value	
caliber (mm)	DN2.5~DN2400	DN2.5~DN2400
Flanges	Comply with GB9119 standard, carbon steel (optional stainless steel)	
pressure level	DN2.5~DN600 1.0MPa, 1.6MPa, 2.5MPa, 4.0MPa DN700~DN2400 0.6MPa, 1.0MPa Special pressure to be determined in consultation with the company	
liner material	PTFE PTFE, Polyurethane rubber, PFA, F46, Natural rubber, chloroprene rubber, ETFE	
electrical conductivity	$\geq 5 \mu\text{S/cm}$ (if it is lower than $5 \mu\text{S/cm}$ , negotiate with our company for ordering)	
electrode	316L, Hastelloy, titanium, tantalum, platinum-iridium alloy, tungsten carbide	
Protection level	IP65	IP65 (Sensor option IP68)
medium temperature	-25°C~80°C For details, see the selection of liner materials	-25°C~140°C For details, see the selection of liner materials
Ambient temperature	-25°C~60°C	
Impact of environmental temperature	$< \pm 0.1\% / 10^\circ\text{C}$ or $< \pm 0.25\% / 10^\circ\text{C}$	
Repetitiveness and Repeatability	$\leq \pm 0.1\%$ or $\pm 0.25\%$	

analog output error	$\leq \pm 0.02\text{mA}$	
Measurement range flow rate	$\leq 20\text{m/s}$	
embedability	--	$\leq 5\text{m}$ (IP68 only)
electrical connection	M20*1.5 Seal, G1 / 2	
Sensor cable	--	<100m (if it is too long, it needs to be negotiated with our company for ordering)
output interface*	Standard output (pulse +4mA~20mA single current output), RS485 output, HART	

## MTVMFE-S type electromagnetic flowmeter converter selection

### 1. Features and scope of application

The MFE-S electromagnetic flowmeter converter adopts unique signal processing technology and high-performance microprocessor, making the system more stable and reliable. There are two types of MFE-S electromagnetic flowmeter converters-process type for process control liquid media and slurry type for slurry measurement.

### 2. Introduction to the performance of MTVMFE-S electromagnetic flowmeter converter

#### ▲ Display (content can be selected)

Two-line displays: It adopts a 32-character high-temperature super torsion LCD display, which can display numbers or letters of flow rate, total amount, alarm information, etc. The display content is optional, and the display content is switched using a magnetic spring switch.

Three-line display: The LCD display with 32-bit characters and 80-bit segment codes can display numbers or characters for flow, total amount, alarm information, etc., as well as bar graphs and alarm prompt symbols for percentage flow. The display of optional display content can be achieved through spring buttons.

#### ▲ The internal accumulation calculator

For the total forward flow, the total reverse flow and the net total can be calculated by 9-bit accumulation.

#### ▲ The preparation of the program

If data is provided to our company at the time of ordering, these relevant data have been prepared in the converter before the product leaves the factory. If necessary, reprogramming of the converter can be easily achieved on-site using local hand-operated terminals or instrument panel keys (three-line display) without affecting the technical performance of the converter. The engineering unit can be selected very flexibly, for example, the support can flexibly choose the flow unit and the total unit that suits it.

Programming options:

- 1 RS232 communication (short-distance communication)
- 2 RS485 communication
- 3 Hart communication
- 4 Profibus-PA communication
- 5 Profibus-DP communication
- 6 FF communication

#### ▲ Power supply: There are three options

- 1 1. AC (100-230)  $\pm 15\%$ V, (47-440) Hz, maximum power consumption is 20VA;
- 2 1. DC (11~40) V, maximum power consumption is 20VA;

3 24V DC power supply + solar energy + battery (special option) ▲ output

1. The analog active output is fully programmable for zero point and full scale deflection. The minimum output is 0/4mA, and the maximum output can reach 21mA. The flow direction can also be displayed, and the output is completely isolated. The output capacity is greater than 15 V, and the load resistance is less than or equal to 750 ohms.

2. Dual analog active output (optional) is similar to 1, and the two analog outputs are divided into forward flow and reverse flow analog.

3. The dual pulse can reflect the forward and reverse flow, and is a (0-1000) Hz square wave or fixed pulse width pulse signal. The parameters such as pulse repetition frequency, cutoff frequency, and pulse width can be programmed. The frequency can be set to 1 to 1000 Hz, any integer in the range. When the isolated output transistor is turned on, the current is less than or equal to 150 mA and the open circuit voltage is less than 35 V.

4. The following parameters can be programmed for dual alarms: Upper and lower limit flow, empty tube detection; error condition; forward/reverse flow; Polarity (normally open/normally open)

Off) Analog quantities within the specified range, pulses (frequency) within the specified range; pulse cutoff frequency, etc. When the output transistor protected by the isolated output is turned on, the current is  $\leq 150\text{mA}$ , so that a voltage of 0V can be generated at this time. The open circuit voltage is less than 35V. (Note: It is not isolated from the frequency output)

5. The RS232C is connected to the SIC handheld terminal or PC through a 9-pin "D" socket.

6. RS485 (optional) serial communication interface.

7. HART (optional) communication interface.

8. Profibus-PA (optional) communication interface.

▲ Enter

The closed accumulation calculator of contacts isolated from the outside is cleared. (Note: Not isolated from pulses and alarms) ▲ Isolate

The isolation voltage is DC 500V between the analog quantity, pulse quantity/alarm signal and ground.

▲ Temperature

working temperature:  $-25\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$

Storage temperature:  $-25\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$

▲ Protection of the external environment

IP65/IP67 independent terminal box and electronic part.

IP65/IP67 is isolated.

▲ Configuration

The configuration is stored in a non-volatile memory (which can be stored for more than 10 years).

The values set by the user themselves can be changed.

▲ Self-diagnosis

The converter can confirm whether the hardware is normal and can perform fault diagnosis. such as coil drive failure.

▲ flow rate Settings

Equivalent to the flow measurement range of the maximum flow rate  $\leq (20\text{m/s})$  percentage, which can be changed.

▲ Exchangeability

The converter is fully interchangeable with MFE-S sensors of various calibers.

The converter can be configured on site. Replacing the converter does not affect the characteristics of the system.

▲ Seal of the outlet box

M20\*1.5 seal sleeve. It can be specified when the user has special requirements.

▲ Time constant

Programmable from 1 second to 120 seconds.

▲ Show direction

The display direction of the integrated type: In the case of using an integrated electromagnetic flowmeter, the direction displayed by the converter may not be easy to observe due to the direction of the pipeline. In this case, the display direction can be selected to meet the requirements (i.e., horizontal or vertical).

### MFE-S type electromagnetic flowmeter selection table

The MFE-S electromagnetic flowmeter consists of a sensor and a converter, and its model is represented as follows:

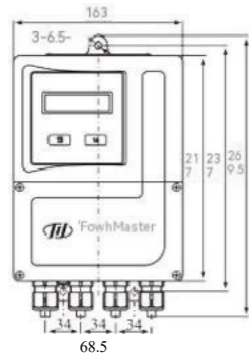
Sensor		Converter										Area S				
Mainly called MFE X Caliber DN 2. 5 to DN 2 4 0 The expression is a three-digit number. The first two digits are the first and second digits of the caliber, and the third digit is the number of 0s after the caliber. The unit is mm.	X X	D i s t r i c t	D i s t r i c t	D i s t r i c t	D i s t r i c t	D i s t r i c t	Y	A r e a	X	X	D i s t r i c t	D i s t r i c t	D i s t r i c t	D i s t r i c t	D i s t r i c t	Area S
Standard pressure 1:16MPa (flange type) 2:4.0MPa DN2.5~DN600 (flange type) 4:2.5MPa DN2.5~DN600 (flange type) 5:1.0MPa (flange type) 6:0.6MPa (flange type) 7: 1.6MPa DN65~DN150 (clamping type) 8:1.0MPa DN200~DN300 (clamping type) 9:4.0 Mpa DN25~DN50 (clamping) S: Special																
liner material 3: Natural rubber 4:NPU 5:ETFE 6: Polyurethane rubber 7:P 8: Chloroprene rubber 9:F46 A:P FA																
electrode material 1:316L 2: Hastelloy 3: Titanium Ti 4: Tantalum 5: Pt-Iridium alloy 6: Tungsten Carbide																
Work environment 1 Generally, the ambient temperature in general places is ≤60 ° C, and the medium temperature is ≤80 ° C 4: General environmental temperature ≤ 60° C, medium temperature ≤ 140° C (only for split type) 6: Environmental temperature in hazardous areas ≤60 ° C, medium temperature ≤80 ° C 8: Hazardous location environmental temperature ≤ 60 ° C, medium temperature ≤ 140 ° C (only for split type)																
grounding ring 0: No grounding ring 1: with grounding ring																
calibration A: Standard test level 0.5 B: Standard test level 0.2 (DN15 ≤ DN ≤ DN 600)																
cable length Split type: ≤100m, the integrated type is 00. If there are special requirements, please specify when ordering																
Outgoing line seal 1:20mm plastic seal (installed by the manufacturer at the factory) 2:G1/2 3:NPT1/2 5:20mm plastic seal (user-mounted cable or integrated)																
form EH: integrated ER: split																
Power supply 1: (100~230) ±15%VAC (47~440Hz) 2: (11-40)VDC																
Showing 0: No display 3: High protection 2 lines display 4: With keyboard 3 lines display 7: Magnetic key 3 line display																

output 0: Standard output 1: Dual current output 2: RS485 The 3:HART 4:Profibus-PA 5:Profibus-DP 6:FF protocol
Work environment 1: General places cannot be used for slurry 2: Can be used in general places for slurry (Only for low-concentration slurry, please choose MFD slurry special flowmeter for high-concentration slurry) 5: Hazardous locations cannot be used for slurry 6: Hazardous locations can be used for slurry (Only for low-concentration slurry, please choose MFD slurry special flowmeter for high-concentration slurry)
Show direction 1: Standard direction 2: + 90 ° 3: + 180 ° 4: + 270 °
Protection level 1: IP65 2: IP67 3: Sensor IP67, Converter IP65 4: Sensor IP68, Converter IP65 5: Sensor IP68, Converter IP67

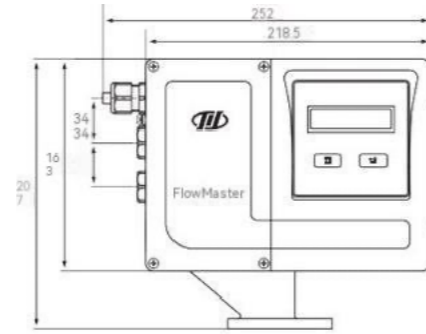
Tags  
1: factory note: The lining material PTFE has poor resistance to negative pressure. If there is negative pressure in the pipeline, consider using PFA or ETFE.

### 3. External dimensions

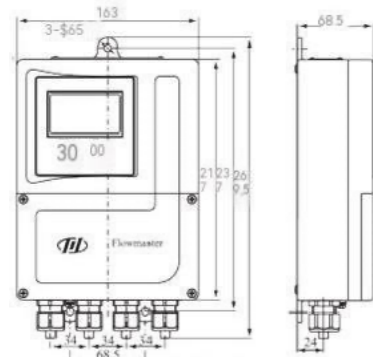
#### Converter size



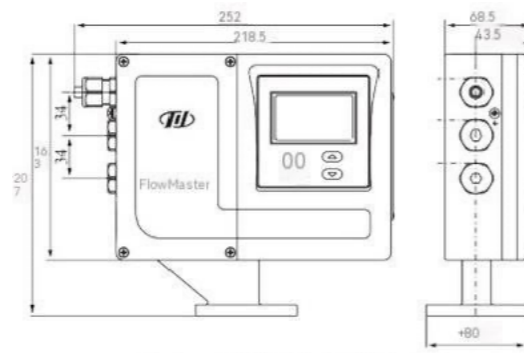
split-type



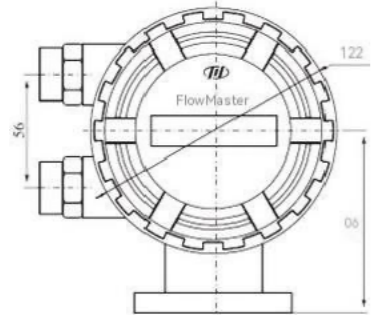
Integral Converter (mounted on the sensor)



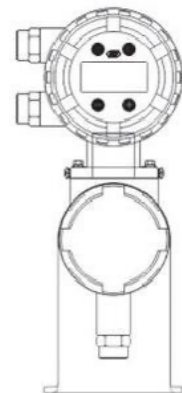
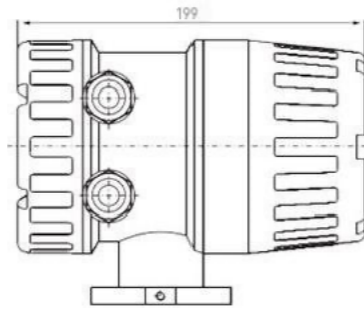
split



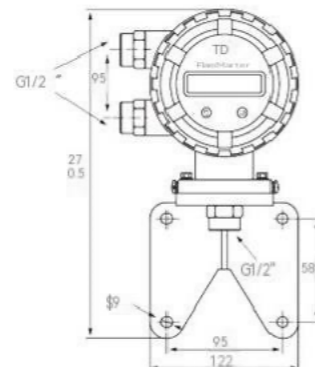
One-piece (mounted on the sensor)



Integral Converter (mounted on the sensor)

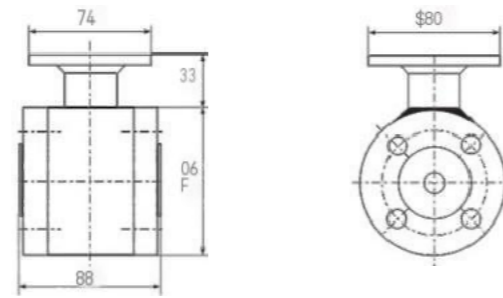


split-type converter

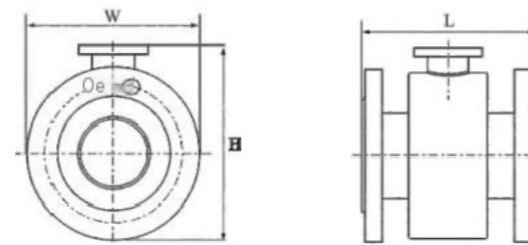


#### 4 Sensor size

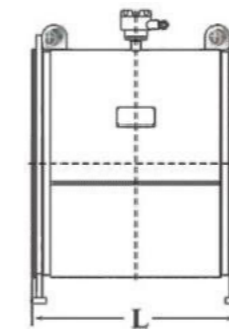
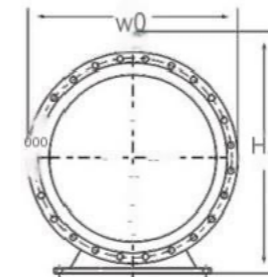
##### Sensor size (pipe type)



caliber (mm)	size (mm)			Weight (kg)			
	L	W	H	1.0MPa	1.6MPa	2.5MPa	4.0MPa
2.5	88	90	123	3	3	3	3
5	88	90	123	3	3	3	3

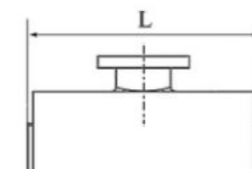
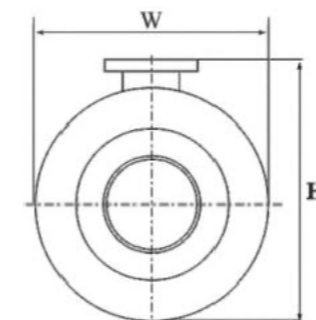


caliber (mm)	size (mm)			Weight (kg)			
	L	W	H	1.0MPa	1.6MPa	2.5MPa	4.0MPa
10	134	90	123	3.5	3.5	3.5	3.5
15	134	95	126	4	4	4	4
20	200	128	137	4	4	4	4.5
25	200	128	147	5	5	5	5.5
32	200	128	155	7	7	7	8
40	200	128	165	7.5	7.5	8	8.5
50	200	165	187	9	9	9.5	10
65	200	185	202	11	11	12	14
80	200	200	223	14	14	15	19
100	250	220	249	19	19	20	24
125	250	250	278	24	24	25	30
150	300	285	303	32	32	35	42
200	350	340	358	41	41	46	56.5
250	450	405	418	68	68	73	85
300	500	460	468	89	89	97	113
350	550	562	560	97	97	124	One
400	600	596	614	122	122	157	One
450	600	640	656	161	161	200	One
500	600	715	715	180	180	243	One
600	600	810	810	241	241	285	One



caliber (mm)	L	W	H	Weight (kg) 0.6MPa
700	700	895	995	420
800	800	1015	1115	541
900	900	1115	1215	668
1000	1000	1230	1350	858
1200	1200	1405	1505	990
1400	1400	1630	1730	1362
1600	1600	1830	1930	1754
1800	1800	2045	2145	1890
2000	2000	2266	2365	2105
2200	2200	2475	2364	3210
2400	2400	2685	2564	3910

##### Sensor size (clamping)



caliber (mm)	L	W	H	Applicable pressure (Mpa)
25	100	70	100	≤4.0
32	100	80	110	≤4.0
40	100	91	121	≤4.0
50	100	100	130	≤4.0
65	100	119	149	≤1.6

80	120	130	160	$\leq 1.6$
100	150	155	185	$\leq 1.6$
125	200	183	213	$\leq 1.6$
150	200	212	242	$\leq 1.6$
200	250	262	292	$\leq 1.0$
250	300	320	350	$\leq 1.0$
300	350	370	400	$\leq 1.0$

## plug-in

### 1 Product Description

#### 1.1 Product Description

The MFP plug-in electromagnetic flowmeter is a new type of fluid flowmeter developed based on the pipeline electromagnetic flowmeter. It uses the method of measuring the average flow rate of the fluid to obtain the volume flow of the fluid. In particular, after using pressure opening and pressure installation technology, the plug-in electromagnetic flowmeter can be installed without stopping (water), and can also be installed on cast iron pipes and cement pipes. The successful development of the plug-in electromagnetic flowmeter provides a new means for the detection of fluid flow.

Unlike general electromagnetic flowmeters, the sensor of the plug-in electromagnetic flowmeter forms an external emitting magnetic field on the outside, and the measuring electrode is located at the end or sides of the sensor, as shown in the following figure. It is worth noting that the flow rate sensor's induced signal is affected by the boundary layer thickness of the fluid and magnetic field, which reduces the linearity of the measurement.

For the MFP plug-in electromagnetic flowmeter, the conductive liquid in the pipeline is the conductor moving in the magnetic field, and the distance between the two electrodes is the length L of the conductor.

The induced voltage is directly proportional to the average flow rate. At this time, the fluid in the pipe

The flow rate can be determined from this: Formula (1)

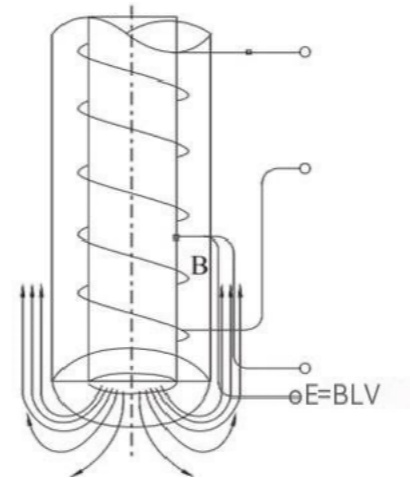
$$Q = \pi D^2 U / 4 K B L$$

D: inner diameter of measuring tube U: Inductive voltage B: magnetic induction strength  
K: Coefficient related to magnetic field distribution

#### 1.2 Product application scope

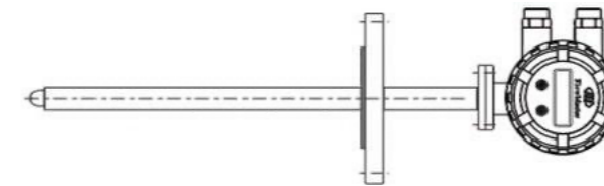
The plug-in electromagnetic flowmeter is composed of a sensor and a converter, used to measure conductive liquids. The conductivity should be greater than  $5 \mu\text{s/cm}$ , and can be used to measure water, sewage, acid, strong alkali, and other media. It is mainly used for measuring the instantaneous flow and volume flow of conductive liquids in industries such as tap water and petrochemicals, and is particularly suitable for flow measurement in industries such as metallurgy, papermaking, and sewage treatment.

#### 1.3 Product composition

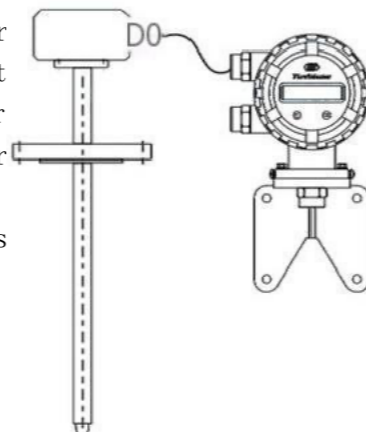


A complete MFP plug-in electromagnetic flowmeter consists of a sensor and a converter. Depending on the protection level and parameter setting form, there are two forms: integrated installation of the sensor and converter, and separate installation of the sensor and converter.

Integrated installation involves connecting the sensor and converter together internally to form a whole, directly outputting a current signal or frequency signal that is linearly related to the flow rate. This method is ready at the factory, and all parameters have been adjusted according to user requirements.



Split installation involves connecting the sensor converter through an external shielded cable, and the two parts form a complete electromagnetic flowmeter shown in the figure. The parameters of the converter be adjusted according to the user's requirements process data, which is suitable for submers applications.



#### 1.4 Use working conditions

Ambient temperature -25 ° C -60 ° C

Power supply: AC 100V-230V, DC 11V-40V

Working power <20 W

Ambient humidity 5%-95%

Maximum medium temperature 80 ° C (integrated), 120 ° C (split)

#### 1.5 instrument features

1 In large pipeline flow detection, the plug-in electromagnetic flowmeter is easy to install, does not require flow interruption, and can be pressurized on-site, providing absolute installation and price advantages.

2 It is suitable for liquid flow detection with a conductivity of 5 $\mu$ s/cm or above for water, sewage, acid, strong alkali, etc. The change in conductivity does not affect the performance, and it is highly adaptable to complex fluid changes. It is particularly suitable for measuring the flow of water supply and drainage pipelines.

3 The measurement accuracy can reach  $\pm 0.5\%$  to  $\pm 1.0\%$  of the indicated value (under reference conditions), and it can measure the flow in both positive and negative directions, providing a good means for accurate flow measurement.

4 The measurement of flow is only related to the insertion depth, so this flowmeter has a wide range of versatility and strong interchangeability. One model can be applied to the fluid measurement requirements of various specifications of pipelines.

5 The instrument adopts a dual-frequency excitation method, which is not affected by the power frequency and operates stably and reliably.

6 2) The converter has good interchangeability and can achieve accuracy without the need for real-flow calibration.

7-Small signal cut-off function. The user can set the lower limit voltage and lower limit flow through the display panel to cut off the interference small signal flow.



8 2) Converters and sensors have multiple protection levels and installation methods, including IP68 levels suitable for underwater installation.

#### 1.6 Ordering Notice

Please read this document before placing an order to understand the product model and coding regulations, and determine the model specifications as needed. If necessary, please also indicate the following requirements:

- 1) The parameters that require the product to be factory-set, such as the upper limit of the flow range or the corresponding upper limit of the flow rate.
- 2-Whether there are immersion requirements;
- 3 Other special requirements, etc.

## 2 Main technical parameters

FlowMaster MTVMFP plug-in electromagnetic flowmeter		
	integrated body	split type
basic error	$\pm 0.5\% \sim \pm 1.0\%$ (under reference conditions)	
caliber (mm)	DN200~DN3000	DN200~DN3000
Flanges	Complies with GB9119 standard, stainless steel	
pressure level	1.6MPa	
Converter housing material	die-casting aluminium alloy	
Sensor housing material	stainless steel	
Sensor structure material	stainless steel/PVD	
electrical conductivity	$\geq 5 \mu\text{S/cm}$ (if it is lower than $5 \mu\text{S/cm}$ , negotiate with our company for ordering)	
electrode	316L, Hastelloy, titanium, tantalum, platinum, gold	
Protection level	IP65/IP67	IP65/IP67 (Sensor optional IP68)
medium temperature	$-25^{\circ}\text{C} \sim 80^{\circ}\text{C}$	$-25^{\circ}\text{C} \sim 120^{\circ}\text{C}$

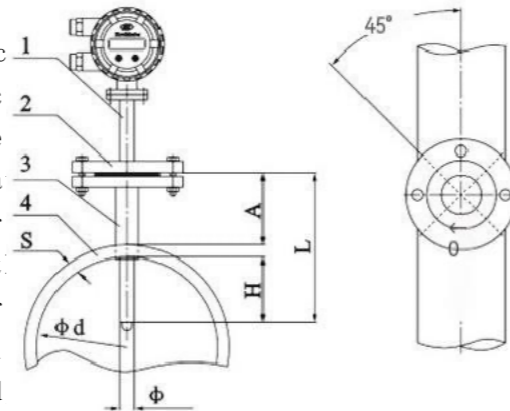
Ambient temperature	$-25^{\circ}\text{C} \sim 60^{\circ}\text{C}$	
Impact of environmental temperature	$< \pm 0.1\% / 10^{\circ}\text{C}$ or $< \pm 0.25\% / 10^{\circ}\text{C}$	
Repetitiveness and Repeatability	$\leq \pm 0.1\%$ or $\pm 0.25\%$	
analog output error	$\leq \pm 0.02\text{mA}$	
Measurement range flow rate	$0.3\text{m/s} \leq V \leq 10\text{m/s}$	
embedability	--	$\leq 5\text{m}$ (IP68 only)
electrical connection	M20*1.5 Seal, G1 / 2	
Sensor cable	--	$< 30\text{m}$ (if it is too long, it needs to be negotiated with our company for ordering)

### 3. External dimensions

#### 3.1 Sensor size

The fixing method of the sensor is flange connection. First, calculate the length of the base connection pipe based on the pipe diameter, then open the pipe to the base to the pipe opening. When welding, pay attention to the correct orientation and insert the sensor probe into the hole, ensuring that the direction of the sensor probe is perpendicular to the fluid direction. The base connection pipe shall exceed the inner wall of the pipe to be tested, and the inner wall of the outer pipe shall be smooth.

The specific dimensions and material specifications are shown in the figure.



After the hole is opened, close the ball valve so that the fluid will not overflow, then connect the seal provided by the manufacturer, and then install the sensor.

(The installation under pressure does not affect normal production), the specific dimensions and material specifications are shown in the figure.

(1) DN200mm, DN300mm, DN400mm (without pressure installation)

No	Name/caliber (mm)	DN200	DN300	DN400
1	Sensor (L x phi)	182 x phi 38		
2	Flanges	DN401.6MPa		
3	connecting pipe	phi 45		
4	Pipeline	phi d x s		

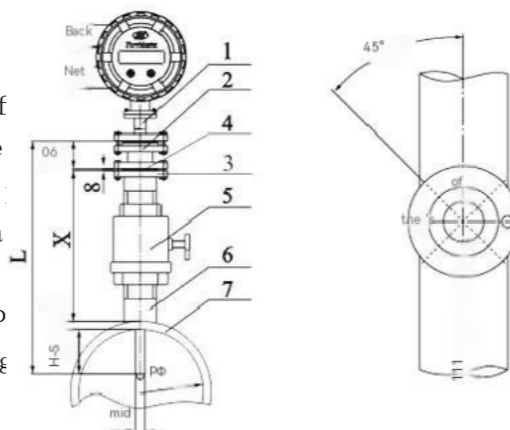
**Installation principle: Ensure that the electrode is inserted into the water pipe**

$$H = (d - 2s) \times 10\%, \text{ i.e. } A = 182(h + S)$$

(i.e. 10% of the pipe inner diameter)

Note: If the production unit does not allow for interruption, it can be installed under pressure. The base is directly welded to the installation of the measuring pipe, and then the root ball valve is installed.

Then, open the hole, with a diameter of  $\Phi 45\text{mm} \sim \Phi$  (Our company can provide a dedicated pipe opening which is an optional part)



Installation principle: Ensure that the electrode is inserted into the water pipe to a depth  $H = (d-2S) \times 10\%$ , and  $X = L-90-8-S-(d-2S) \times 10\%$

No	Name/caliber (mm)	DN200	DN300	DN400
1	Sensor (L x 1)	400 × Φ38		
2	transition flange	DN401.6MPa		
3	connecting flange	DN40		
4	Seals (provided by the	Φ45 × 3		

(3) DN500mm~DN1200mm (with

Name/caliber (mm)	DN500	DN600	DN700	DN800	DN900	DN1000	DN1200
Sensor (L x 1)	450 × Φ38						
transition flange	DN401.6MPa						
connecting flange	DN40						
Seals	①45 × 3						

(4) DN1400mm, DN1600mm, DN1800mm (with pressure

Name/caliber (mm)	DN1400	DN1600	DN1800
Sensor (L x 1)	600 × Φ38		
transition flange	DN401.6MPa		
connecting flange	DN40		
Seals	①Φ45 × 3		

(5) DN2000mm~DN3000mm (with

Name/caliber (mm)	DN2000	DN2200	DN2400	DN2600	DN2800	DN3000
Sensor (L x 1)	800 × Φ38					
transition flange	DN401.6MPa					
connecting flange	DN40					
Seals	Φ45 × 3					

Note: The above are all steel pipe installation selections. If

### MFP plug-in electromagnetic flowmeter selection table

The MFP electromagnetic flowmeter consists of a sensor and a converter, and its model is represented as follows: Sensor Converter

main name	MFPXXX Area	D	D	D	Area XX	X	D	D	Dis	D	D
The inner diameter of the pipe used in the field	Area X	i	i	i			i	i	tri	i	i
Range: DN200-DN3000		s	s	s			s	s	ct	s	s
The expression is a three-digit number, and the first two digits are the number of the caliber		t	t	t			t	t		t	t
I. The second digit, the third digit is the number of 0s after the second digit		r	r	r			r	r		r	r
Number, in mm.		i	i	i			i	i		i	i
		c	c	c			c	c		c	c
		t	t	t			t	t		t	t
Standard pressure											
1:1.6MPa											
liner material											
P: PVDF (polyvinylidene fluoride ethylene)											
electrode material											
1:316L	4:										
2:	Tantal										
Hastelloy	um Ta										
C 3: Iron	-										
T											
Work environment											
1 Generally, the ambient temperature in general places is ≤50 °C, and the medium temperature is ≤80 °C											
4: General environmental temperature ≤60 °C, medium temperature ≤110 °C (only for split type) 6: Hazardous location environmental temperature ≤50 °C, medium temperature ≤80 °C											
installation											
0: No pressure installation											
1: Pressure installation (For the value ≥DN500, it is recommended to use pressure installation)											
calibration											
<del>0: No calibration</del>											
cable length											
<del>50m (standard length)</del>											
Outgoing line seal											
1:20mm plastic seal (installed by the manufacturer when leaving the factory)											
2:G1/2											
3:NPT1/2											
<del>50m (standard length)</del>											
E H: integrated E R: split											
Power supply											
1:AC(100-230)V(47-440)Hz 2:DC(11-40)V											
Showing											
0: No display 3: High protection 2 lines display 4: With keyboard 3 lines display 7: Magnetic key 3 line display											
output interface											
0: Standard output 1: dual current output											
2:RS485											
4:Profibus-PA											
3:HART											
Work environment											
Can not											
1: be used											
General											
for											
1 slurries											
2: General place											
Can be used for slurry (only for low-concentration slurry, please choose MFD slurry special flowmeter for high-liquidity slurry)											
6: Hazardo											
Can be used for slurry (only for low-concentration slurry, please choose MFD slurry special flowmeter for high-concentration slurry)											

locati on 5: Hazard ous locati on	Can not be used for slurries	us locatio n		
Show direction				
1: Standard direction 2: + 90 ° 3:+180° 4:+270°				
Protection level				
1: IP65 2: IP67 3: Sensor IP67, Converter IP65 4: Sensor IP68, Converter IP65 5: Sensor IP68, Converter IP67				
Tags				
1: factory configuration				

## GPRS remote

GPRS remote collection system is a wireless real-time monitoring system that integrates data collection, transmission and remote control. The system integrates communication technology, network technology, automatic control technology and computer technology, and has high reliability and economy.

The system divides the data collected from each branch point according to the topology structure of the pipe network. (e.g., pressure, instantaneous flow, cumulative flow, liquid level, temperature, valve status, sensor, access control, etc.) Automatically analyze the operating status of relevant pipe sections, intuitively display real-time curves, working condition graphs, reports, alarm status, etc. of each point.

The electromagnetic water meter is of great significance to the system. Through the system area management, combined with the flow and pressure information of monitoring points, the leakage loss (DMA) in the pipeline network area can be dynamically grasped, and the leakage rate can be greatly reduced through timely and normalized management.

### Area measurement display



### System features:

- ▲ Supports all flow meters in the company.
- ▲ Multiple data can be read, supporting remote instrument maintenance.
- ▲ Reports can be exported with one click on the website.
- ▲ Supports 4mA-20mA interface, with stronger compatibility.
- ▲ Added GPRS pressure gauge, which can be used in combination with flowmeter and GPRS pressure gauge.

- ▲ Compatible with flow meters from other manufacturers.
- ▲ Excellent permission management system to ensure data security.

### Electromagnetic water meter system reading and writing content:

(Read) forward total, reverse total, net total, instantaneous flow, flow rate, temperature, pressure, upper limit alarm, empty tube alarm. (write) instrument parameters such as range.

Set name	Sound output (m/m)	In (a)	Total amount of normal meat	Reverse total	Outlet amount (a)	Net flow rate	Pressure (V)	We n Ji a	Internal electrical voltage of the diesel generator	pos itive	Anti-mist reporting	Q Search
1 Chaoju Shibian San Optoelectronic Technology Co., Ltd. (22019-02-2508: 00: 01 17081564 8191790510)												
2 Hanzhou Chaoji San Optoelectronic Technology Co., Ltd. (12019-02-2508: 00: 00 17081570 2 81917905107)												
3 Nanzhou Jinziji Sales Co., Ltd. 2019-02-2508: 00 = 00 17081574 8191790511												
Tangzhou German Industrial West 2019-02-2508:00: 01 2 17081579 81917905116												
5 Guangdong Yihe Dairy Co., Ltd. (2) 2019-02-2508: 00: 00 17081584 81917905121												
6 South Limited Company (2) 2019-02-2508:00 = 01 2 17081568 91790075105												
Chang Fang Qingming Co., Ltd. (2) 2019-02-2508-00: 00 17081581 91790075118												
Pengzhou Lizao P Plant South Limited Company 2019-02-2509: 00: 01 17081582 91790075119												
Huale Red District 2019-02-2508: 06: 01 17081563 9191790510												
10 Guangdong Jiaodal Technology Co., Ltd. 2019-02-2508: 00: 00 17081565 91917905102												
11 Yingfeng Real Estate Co., Ltd. (1) 2019-02-2508: 00: 01 17081566 91917905103												
12 Great 2019-02-2508: 00: 01 17081567 91917905104												
13 Huizhou Weihua Technology Co., Ltd. 2019-02-2508: 00: 01 17081569 91917905106												
Jinfang Real Estate Development Co., Ltd. 2019-02-2508: 00: 03 17081571 91917905108												
15 Huizhou Kwan Optoelectronics Co., Ltd. 2019-02-2508: 00 = 01 17081572 91917905109												
16 Turner Electronics Co., Ltd. 2019-02-2508: 0001 7081573 91917905110												
Shizhou Investment Theft Co., Ltd. (1) 2019-02-2508: 00: 01 1708157 91917905112												
State Investment Operation Co., Ltd. (2) 2019-02-2508: 00: 01 17081576 919179051												
19 Governor Fang Zhao Ming Limited Public Curve (1) 2019-02-2508: 00: 01 17081577 91917905114												
20 Kelik Technology Co., Ltd. 2019-02-2508: 00 = 01 17081578 91917905115												
21 Shizhou Qiyang Technology Live 2019-02-2508: 00 = 01 17081580 91917905117												
Guangdong Yili Dairy Co., Ltd. (1) 2019-02-2508: 00: 01 17081583 91917905120												
Nansheng Maokou Co., Ltd. 2019-02-2508: 00: 01 17081585 91917905122												
24 Quanda (Conzhou) Co., Ltd. (2) 2019-02-2508: 00: 01 17081556 91917905123												
25 Chengsu Power Equipment Co., Ltd. 2019-02-2508: 00: 01 17081557 91917905124												
26 Yingzhou Lijin Medical Property South Limited Company 2019-02-2508: 00: 01 17081558 91917905125												
27 2019-02-2508: 00: 01 17081559 91917905126, Co., Ltd												
28 Qinzhou Yi Delay Transfer Co., Ltd. 2019-02-2508: 00 = 01 17081560 9191790512												
29 No. 3# set quantity 2019-02-2508:00=01 K896532 91917905128												
2 2019-02-2508:00:01 k0991234 91917905129												

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The system can perform equipment management, data management, chart query, report query, dynamic analysis of real-time data, various graphical analysis, display the installation position and working status of instruments in the pipeline network, and provide various forms of alarm output. The system can also be logged in to the mobile app to monitor all information of instrument operation in real-time.

