

WHLDE Electromagnetic Flowmeter

I. Overview

WHLDE Electromagnetic Flowmeter is suitable for measuring the volume flow of conductive liquid and slurry in closed pipes, such as clean water, sewage, various acids, alkalis, mud, slurry, pulp and food liquid.

- Product Standard: The design, production and testing of WHLDE electromagnetic flowmeter meters are based on the standard "JJG -1033 -2007 electromagnetic flowmeter" .
- Measuring fluid: conductive fluid, slurry
- The measuring accuracy was $\pm 0.25\%$, $\pm 0.50\%$, $\pm 1.0\%$. According to the actual work needs, users can choose the economic and appropriate measurement accuracy.
- Connection: Flange type, clamp type
Rated pressure: GB0.25Mpa, 0.6Mpa, 1.0Mpa, 1.6Mpa, 2.5Mpa, 4.0Mpa, 6.4Mpa, 10Mpa, 16Mpa, 25Mpa, 40Mpa, 63Mpa
- Medium temperature: $\leq 60\text{ }^{\circ}\text{C}$, $\leq 120\text{ }^{\circ}\text{C}$, $\leq 150\text{ }^{\circ}\text{C}$
- Caliber: DN10-2200
- Electrode material: 316L, Hastelloy (B, C), Titanium, Lithium, Platinum
- Liner material: rubber (Chloroprene, polyurethane) , F4, F46, PFA
- Measuring tube: stainless steel
- Flange: carbon steel (conventional) , stainless steel
- Body: carbon steel (conventional) , stainless steel
- Housing: carbon steel (conventional) , stainless steel
- Head: die-cast aluminum
- Power supply: 220VAC, 24VDC, battery power
- Communication Interface: RS-232, RS-485
- Output Signal: 4-20mA, pulse output, frequency output
- Protocols: Hart, Modbus, Profibus



Integral (on-site display)

Split type with proprietary shielding line, IP68 waterproof (sunk 5 meters underwater to ensure service life) , remote display automatic meter reading, strong acid, strong alkali, sulfuric acid, nitric acid, industrial wastewater and so on.

II. Velocity range in flow measurement

The economic flow rate is 1.5 ~ 3m/s. When measuring easy crystallization and scaling solution, the flow rate should be appropriately increased, 3 ~ 4m/s is appropriate, which play a role of self-cleaning, prevent adhesion deposition. The sensor should be installed vertically as much as possible, and the flow rate should be reduced to 1 ~ 2m/s to reduce the wear of the liner and electrode. In practical applications, the flow rate of fluid rarely exceeds 7 m/s, and even rarer than 10 m/s (except for scientific research units) . Therefore, it is of great significance for the normal operation of the instrument and the increase of the service life of the instrument to select the pipe diameter according to the economic flow velocity.

III. Selection of the protection level

IP65: Anti -spraying type, allowing water to spray water from the sensor in any direction. The water spray pressure is 30kPa, the output of the water is 12.5L/min, and the distance is 3m.
IP68: Submerged type, long -term work in water.
The protection level should be selected according to the actual situation. If the sensor is installed below the ground, often flooded, IP68 should be selected. The sensor is installed above the ground, and IP65 should be selected.

IV. Type selection

Site installation conditions are relatively complex, harsh cases, please choose split type.



Split Type (remote transmission)

V. Shape and installation dimensions

External dimension of instrument, external dimension of flange-type sensor, pressure series as shown in Figure 1

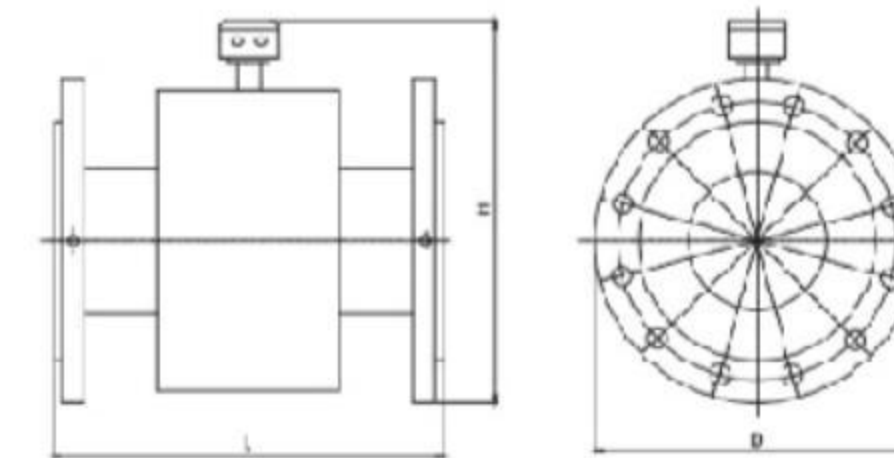


Figure 1
DN6mm-DN3000mm flange-type sensor appearance chart

Flange size
Connecting flanges and mounting dimensions are shown in Figure 2
Performance Standard for connecting flanges:
4.0Mpa (DN6mm~DN50mm) GB/T9119-2000
1.6Mpa (DN65mm~DN250mm) JB/T81-94
1.0Mpa (DN300mm~DN1000mm) JB/T81-94
0.6Mpa (DN1200mm~DN3000mm) JB/T81-94

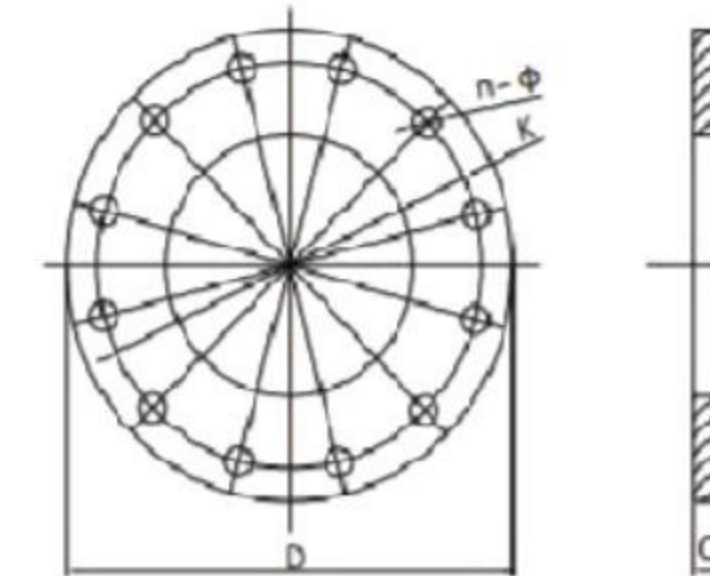


Figure 2. Connecting flange

| Nominal diameter (mm) | Nominal pressure (MPa) | Instrument length (with liner) | Dimensions | | Reference weight |
|-----------------------|------------------------|--------------------------------|------------|------|------------------|
| | | | D | H | |
| 6 | 4.0 | 200 | 90 | 220 | 6 |
| 10 | | 200 | 90 | 220 | 6 |
| 15 | | 200 | 95 | 220 | 8 |
| 20 | | 200 | 105 | 220 | 10 |
| 25 | | 200 | 115 | 223 | 12 |
| 32 | | 200 | 140 | 240 | 13 |
| 40 | 1.6 | 200 | 150 | 250 | 14 |
| 50 | | 200 | 165 | 263 | 15 |
| 65 | | 250 | 185 | 283 | 18 |
| 80 | | 250 | 200 | 290 | 20 |
| 100 | | 250 | 235 | 318 | 25 |
| 125 | | 250 | 270 | 350 | 28 |
| 150 | 1.0 | 300 | 300 | 380 | 30 |
| 200 | | 350 | 340 | 430 | 50 |
| 250 | | 450 | 405 | 495 | 70 |
| 300 | | 500 | 460 | 547 | 95 |
| 350 | | 550 | 520 | 602 | 120 |
| 400 | | 600 | 580 | 665 | 140 |
| 450 | 0.6 | 600 | 640 | 720 | 160 |
| 500 | | 600 | 715 | 783 | 200 |
| 600 | | 600 | 840 | 897 | 280 |
| 700 | | 700 | 895 | 982 | 350 |
| 800 | | 800 | 1015 | 1092 | 400 |
| 900 | | 900 | 1115 | 1192 | 480 |
| 1000 | 0.6 | 1000 | 1230 | 1299 | 550 |
| 1200 | | 1200 | 1450 | 1488 | 660 |
| 1200 | | 1200 | 1405 | 1488 | 680 |
| 1400 | | 1400 | 1630 | 1700 | 750 |
| 1600 | | 1600 | 1830 | 1924 | 850 |
| 1800 | | 1800 | 2045 | 2134 | 980 |
| 2000 | 0.6 | 2000 | 2265 | 2344 | 1200 |
| 2200 | | 2200 | 2475 | 2549 | 1600 |
| 2400 | | 2400 | 2685 | 2754 | 2000 |
| 2600 | | 2600 | 2905 | 2964 | 2400 |
| 2800 | | 2800 | 2905 | 3169 | 2700 |

VI. Maximum and minimum flow rates must conform to the parameters in the table below:

| Inner Diameter(mm) | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 |
|--------------------|--------|--------|-------|-------|--------|--------|--------|--------|
| Qmin (m³/h) | 0.0238 | 0.0636 | 0.12 | 0.176 | 0.29 | 0.452 | 0.7 | 1.19 |
| Qmax (m³/h) | 4.24 | 9.54 | 16.96 | 26.5 | 43.42 | 67.85 | 106 | 179 |
| Inner Diameter(mm) | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 |
| Qmin (m³/h) | 1.8 | 2.28 | 4.41 | 6.36 | 11.3 | 17.6 | 25.4 | 34.6 |
| Qmax (m³/h) | 271 | 424 | 662 | 954 | 1690 | 2650 | 3810 | 5190 |
| Inner Diameter(mm) | 400 | 450 | 500 | 550 | 600 | 700 | 800 | 900 |
| Qmin (m³/h) | 45.2 | 57.2 | 77.6 | 85.8 | 101 | 138 | 180 | 229 |
| Qmax (m³/h) | 6780 | 8570 | 10600 | 12800 | 15200 | 20700 | 27100 | 34300 |
| Inner Diameter(mm) | 1000 | 1100 | 1200 | 1400 | 1600 | 1800 | 2000 | 2200 |
| Qmin (m³/h) | 282 | 342 | 407 | 554.1 | 732.7 | 916 | 1131 | 1368.4 |
| Qmax (m³/h) | 42400 | 51300 | 6100 | 83121 | 108566 | 137404 | 169635 | 205258 |

VII. Electrode Material Selection

Select the electrode material according to the corrosiveness of the measured liquid. Please check the anti -corrosion manual. For special fluids, should be tested.

| Material | Corrosion resistance |
|---------------|---|
| 316L | Applicable: 1. Domestic water, industrial water, raw water, well water, urban sewage. 2.Weak corrosive acid, alkali and salt solutions |
| Hastelloy C | Applicable: 1. Non-oxidizing acids such as hydrochloric acid (concentration less than 10%) 2. Sodium hydroxide (less than 50% concentration) , any concentration of ammonium hydroxide solution 3. Phosphoric acid, organic acid Not applicable: nitric acid |
| Hastelloy B | Application: 1. Mixed acid such as chromic acid and sulfuric acid mixed solution 2. Oxidizing salts such as Fe + + + , Cu + + , seawater Not applicable: hydrochloric acid |
| Ti | Application: 1.Salt such as: (1) chloride (chloride/magnesium/aluminum/calcium/ammonium/iron, etc.) (2) Sodium, potassium, ammonium, hypochlorite, seawater 2. Concentrations less than 50% potassium hydroxide, ammonium hydroxide, and barium dihydroxide solutions Not applicable: hydrochloric acid, sulfuric acid, phosphoric acid, hydrofluoric acid and other reductive acids |
| Ta | Applicable: 1. Hydrochloric acid (less than 40%). Dilute sulfuric acid and concentrated sulfuric acid (excluding smoke sulfuric acid) 2. Chlorine dioxide, iron hydrogenated, hydrogen acid, sodium cyanide, lead acetate, etc. 3. Oxidizing acid such as nitric acid (including fuming nitric acid) , aqua regia with temperature below 80 °C Not applicable: alkali, hydrofluoric acid |
| Platinum (Pt) | Applicable: almost all acids, bases, salt solutions (including fuming sulfuric acid, fuming nitric acid) Not applicable: aqua regia, ammonium salts |

VIII. Selection of liner material

The liner material shall be selected according to the corrosiveness, abrasion and temperature of the measured medium under test.

| Liner material | Name | Symbol | Performance | Maximum operating temperature | Applicable liquid | Applicable caliber |
|-----------------|--|----------|---|-------------------------------|---|--------------------|
| Rubber | neoprene | CR | Medium abrasion resistance, resistance to general low concentration of acid, alkali and salt corrosion | <80°C | Tap Water, industrial water, sea water | DN50-2200 |
| | Polyurethane rubber | PU | Excellent wear resistance, poor acid and alkali resistance | <60°C | Pulp, mineral pulp and other slurry | DN25-500 |
| | polytef | F4/PTFE | Chemical properties are very stable, resistant to hydrochloric acid, sulfuric acid, aqua regia, strong alkali corrosion | <180°C | highly corrosive acid -base salt liquid | DN25-1200 |
| Fluoro-plastics | Tetrafluoroethylene and hexfluoropylone Teflon FEP | F46/FEP | chemical properties are slightly inferior to F4 | <120°C | highly corrosive acid-base salt liquid | DN115-200 |
| | Tetrafluoroethene and ethylene | F40/ETFE | chemical properties are slightly inferior to F4 | <120°C | highly corrosive acid-base salt liquid | DN250-2200 |
| Plastic | polyethylene | PO | chemical performance stable | <60°C | sewage | DN50-2200 |
| | Polyzhenylene sulfon | PPS | | <110°C | hot water | DN50-2200 |

IX. Type Selection

| | Specification Code | Description |
|-----------------------------|--------------------|---------------------------|
| Factory standard | WH | WUXI WOBUAN |
| Type of instrument | LDE | Electromagnetic Flowmeter |
| Caliber code | -XXX | EXAMPLE: 100 MEANS DN100 |
| Flowmeter type | A | Integral |
| | F | Split |
| | C | Insert type |
| | R | Heat |
| | W | Sanitary type |
| | K | Hoe |
| | J | Clamp |
| Electrode material | A | Stainless Steel 316L |
| | B | HB/HC Alloy |
| | C | Titanium alloy |
| | D | Ta |
| | E | Pt |
| Liner material | 1 | Rubber CR |
| | 2 | Polyethylene PO |
| | 3 | PTFE |
| | 4 | F4 |
| | 5 | PFA |
| | 6 | Polyurethane rubber |
| Power supply | 0 | 220VAC AC |
| | 1 | 24VDC DC |
| | 2 | Battery powered |
| Output signal Communication | 3 | 220AC/24VDC |
| | 0 | 4-20mA, pulse, frequency |
| | 1 | RS232 |
| | 2 | Rs485 |
| Rated pressure | 3 | Hart |
| | 4 | 4-20mA/RS485 |
| | A | 0.6 |
| | B | 1.0 |
| | C | 1.6 |
| | D | 2.5 |
| E | 4.0 | |
| F | 6.4 | |

Example: WHLDE-80F-A434C

Description: Wuxi Wohuan electromagnetic flowmeter, DN80, split Type 316L electrode, polytetrafluoroethylene liner, dual power supply 220VAC24VDC, dual output 4-20mA / RS485, rated pressure 1.6 MPa.