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Electromagnetic Flow Meter



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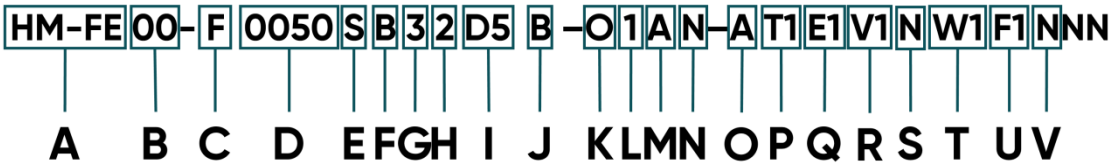
Benefits

- Energy-saving flow measurement – no pressure loss due to cross-section constriction
- Maintenance-free – no moving parts
- Good corrosion resistance and abrasion resistance with multiple selection of lining and electrodes
- Low installation requirements, the front straight pipe section is not less than 5D, and the rear straight pipe section is not less than 2D (D is the inner diameter of the selected instrument).
- High accurate measurement, reaching ±0.3% of the indicated value
- Low power consumption, less than 15VA
- The transmitters are interchangeable and accuracy can be achieved without recalibration of the actual flow
- Wide measuring range, up to 1000:1
- High input impedance of the converter (>10^{12} Ω), suitable for measuring low conductivity media ≥ 1μS/cm
- Flexible sensor & transmitter styles to ensure compatibility in various application

Product Selection Guide

Several sensor types, liner types, electrode materials, electrode types, grounding options are available for FE0 Series Magnetic Flowmeters to ensure compatibility with any application and installation. The following tables are listed for the guidance on selecting those types and materials.

Mode Code Structure



A. Base Model-Magnetic Flow Meter
B. Series
C. Connection
D. Line Size
E. Electrode Material
F. Grounding
G. Lining Material
H. Temp. Range
I. Pipeline Pressure Standards
J. Sensor Protection Rating
K. Structure Type
L. Output Signal
M. Power Supply
N. Flameproof
O. Accuracy
P. Flange (ring) Material
Q. Sensor Housing Material
R. Sensor Appearance Processing
S. Signal Line Length for Remote Mount
T. Sealing Plug
U. PIO Configuration
V. Sealing Gasket Material

The starred (★) offerings represent the available options and the letters in the brackets of the table's title represent the mode code.

Table 1. Series Selection (B)

Code	Description
00	Standard series
01	Low conductivity series
02	Micro flow series
03	Slurry series

Table 2. Connection Selection (C)

Code	Description
F	Flanged
J	Wafer (flangeless)
K	Hygienic

Based on Table 1 and Table 2, the sensor can be divided into the following categories.

Table 3. Sensor Category

Series (B)	Connection (C)	General Characteristics
00	F	Standard Process Sensor Flanged Process Connections
		10mm (3/8 in.) to 1200mm (48 in.) Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 0.5~12m/s
00	J	Standard Process Sensor Wafer (flangeless) Design
		Economical, compact, and lightweight alternative to flanged sensors 25mm (1 in.) to 200mm (8 in.)
		Carbon Steel Housing (stainless steel housing is optional) Conductivity ≥ 5μS/cm, Flow Rate Range: 0.5~12m/s
00	K	Standard Process Sensor Hygienic Sensor
		Designed for food, beverage, and pharmaceutical applications
		15mm (1/2 in.) to 80mm (3 in.)
		304 Stainless Steel (316 , 316L optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 0.5~12m/s
01	F	Low Conductivity Process Sensor Flanged Process Connections
		10mm (3/8 in.) to 500mm (20 in.)
		Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 1μS/cm, Flow Rate Range: 0.5~12m/s
01	J	Low Conductivity Process Sensor Wafer (flangeless) Design
		Economical, compact, and lightweight alternative to flanged sensors
		25mm (1 in.) to 200mm (8 in.)
		Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 1μS/cm, Flow Rate Range: 0.5~12m/s

01	K	Low Conductivity Process Sensor
		Hygienic Sensor
		Designed for food, beverage, and pharmaceutical applications
		15mm (1/2 in.) to 80mm (3 in.)
		304 Stainless Steel (316 , 316L optional)
		Conductivity ≥ 1μS/cm, Flow Rate Range: 0.5~12m/s
02	F	Micro Flow Process Sensor
		Flanged Process Connections
		10mm (3/8 in.) to 40mm (3/2 in.)
		Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 0.01~12m/s
02	K	Micro Flow Process Sensor
		Hygienic Sensor
		Designed for food, beverage, and pharmaceutical applications
		15mm (1/2 in.) to 40mm (3/2 in.)
		304 Stainless Steel (316 , 316L optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 0.01~12m/s
03	F	Slurry Process Sensor
		Flanged Process Connections
		10mm (3/8 in.) to 1200mm (48 in.)
		Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 1~12m/s
03	J	Slurry Process Sensor
		Wafer (flangeless) Design
		Economical, compact, and lightweight alternative to flanged sensors
		50mm (2 in.) to 200mm (8 in.)
		Carbon Steel Housing (stainless steel housing is optional)
		Conductivity ≥ 5μS/cm, Flow Rate Range: 1~12m/s

Note: The rest of selections depends on the sensor category, so code of series and connection will be combined to generate the code of sensor (e.g. 00F for standard series with flanged connection).

Table 4. Magnetic Flow meter Line Size Selection (D)

00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
0010-1200	0025-0200	0015-0080	0010-0500	0025-0200	0015-0080	0010-0040	0015-0040	0010-1200	0050-0200

The selected flowmeter sizing is not necessarily the same as the connected pipe diameter, and should be determined according to the flow rate of medium inside pipe.

Generally speaking, the flow rate is 0.5m/s~5m/s, which is the economical flow rate, and the sensor sizing can be the same as the pipe diameter. Unless the medium is less abrasive and abrasion-resistant materials are used, it is recommended that the long-term working flow rate should not exceed 7m/s.

For fluids containing substances that are easy to adhere, precipitate, scale, etc., it is recommended to use a common flow rate of not less than 2m/s, preferably 3m/s~4m/s or above, to play a role in self-cleaning, preventing adhesion and precipitation.

For fluids with strong abrasiveness such as slurry, the common flow rate should be lower than 3m/s to reduce abrasion on the lining and electrodes.

When measuring low-conductivity media with a conductivity of 1μS/cm~5μS/cm, try to choose a low flow rate (0.5m/s~1m/s), because the flow noise will increase with the increase of flow rate, and the output will shake.

It is suggested to select the same diameter of the sensor as the process pipe to be connected, which is very convenient for installation. However, in the following cases, the diameter of the sensor can be different from the diameter of the connected process pipeline:

A. The flow rate in the pipeline is low, and the process flow rate is relatively stable. In order to meet the flow rate range requirements of the flowmeter, the flow rate is partially increased in the flowmeter part, the sensor sizing is selected to be smaller than the process pipeline diameter, and a reducer is added before and after the sensor.

B. Considering the price, for large-diameter electromagnetic flowmeters, the larger the diameter, the higher the price. For the situation where the flow rate in the pipeline is low and the process parameters are stable, a smaller-diameter sensor can be selected, which can not only make the flowmeter run in a better working state, but also reduce the purchase cost.

Issues to be noted when installing reducers: In order not to affect the distribution of the velocity field too much and the measurement accuracy of the instrument, the central cone angle a of the reducer is not greater than 15°, so that the reducer can be regarded as a part of the straight pipe section.

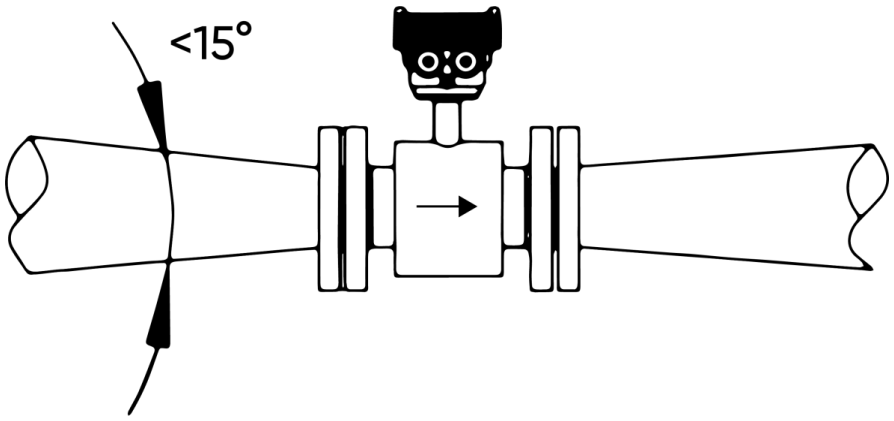


Table 5. Electrode Material Selection (E)

Code	General Characteristics	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
S	316L Stainless Steel (316L): Used for measuring water, sewage or slightly corrosive media such as inorganic and organic acids	★	★	★	★	★	★	★	★	★	★
C	Hastelloy C (HC): Resistant to oxidizing acids, such as nitric acid and mixed acid; also resistant to corrosion by oxidizing salts or other oxidants	★	★		★	★		★		★	★
L	Titanium (Ti): It is very similar to glass. It is resistant to almost all chemical media except hydrofluoric acid, fuming sulfuric acid, fuming nitric acid, and alkali	★	★		★	★		★		★	★
T:	Tantalum (Ta) : It is resistant to corrosion from seawater, various chlorides and hypochlorites, oxidizing acids, organic acids, alkalis, etc., but not resistant to pure reducing acids	★	★		★	★		★		★	★
W	Tungsten Carbide: Good abrasion resistance, can be used for measuring highly abrasive media, such as slurry; can also be used to reduce the noise caused by particles impacting the electrode. E.g. paper pulp	★	★		★	★		★		★	★
Y	Platinum-iridium Alloy: Good corrosion resistance to various acids, alkalis and salts; not resistant to aqua regia corrosion	★	★		★	★		★		★	★

Table 6. Grounding Selection (F)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
N	No grounding (dual electrode)			★			★		★		
S	304 Grounding Ring	★ (DN10-DN600)	★ (DN25-DN200)		★ (DN10-DN600)	★ (DN50-DN200)		★ (DN10-DN600)		★ (DN10-DN600)	★ (DN50-DN200)
A	304 Grounding Ring with Neck	★ (DN25-DN600)	★ (DN25-DN200)		★ (DN25-DN600)	★ (DN50-DN200)		★ (DN25-DN600)		★ (DN25-DN600)	★ (DN50-DN200)
B	Ground Electrode (Three Electrodes)	★ (DN10-DN1200)	★ (DN25-DN200)		★ (DN10-DN1200)	★ (DN50-DN200)		★ (DN10-DN1200)		★ (DN10-DN1200)	★ (DN50-DN200)
F	316L Grounding Ring	★ (DN10-DN600)	★ (DN25-DN200)		★ (DN10-DN600)	★ (DN50-DN200)		★ (DN10-DN600)		★ (DN10-DN600)	★ (DN50-DN200)
C	HC Grounding Ring	★ (DN10-DN600)	★ (DN25-DN200)		★ (DN10-DN600)	★ (DN50-DN200)		★ (DN10-DN600)		★ (DN10-DN600)	★ (DN50-DN200)
L	Ti Grounding Ring	★ (DN10-DN600)	★ (DN25-DN200)		★ (DN10-DN600)	★ (DN50-DN200)		★ (DN10-DN600)		★ (DN10-DN600)	★ (DN50-DN200)
T	TA Grounding Ring	★ (DN10-DN600)	★ (DN25-DN200)		★ (DN10-DN600)	★ (DN50-DN200)		★ (DN10-DN600)		★ (DN10-DN600)	★ (DN50-DN200)

The induction signal voltage of the electromagnetic flowmeter is very small and is easily affected by external noise or other electromagnetic signals. The function of the grounding ring is to form a space to shield external interference by grounding the flowmeter shell, thereby improving the measurement accuracy. (If the user uses non-metallic pipes, the grounding ring must be installed. It should be noted when ordering that the grounding ring option should be selected). Even for metal pipes, the instrument should be reliably and separately grounded, and the grounding resistance should be less than 10 ohms. The following is the installation method of the instrument under different conditions:

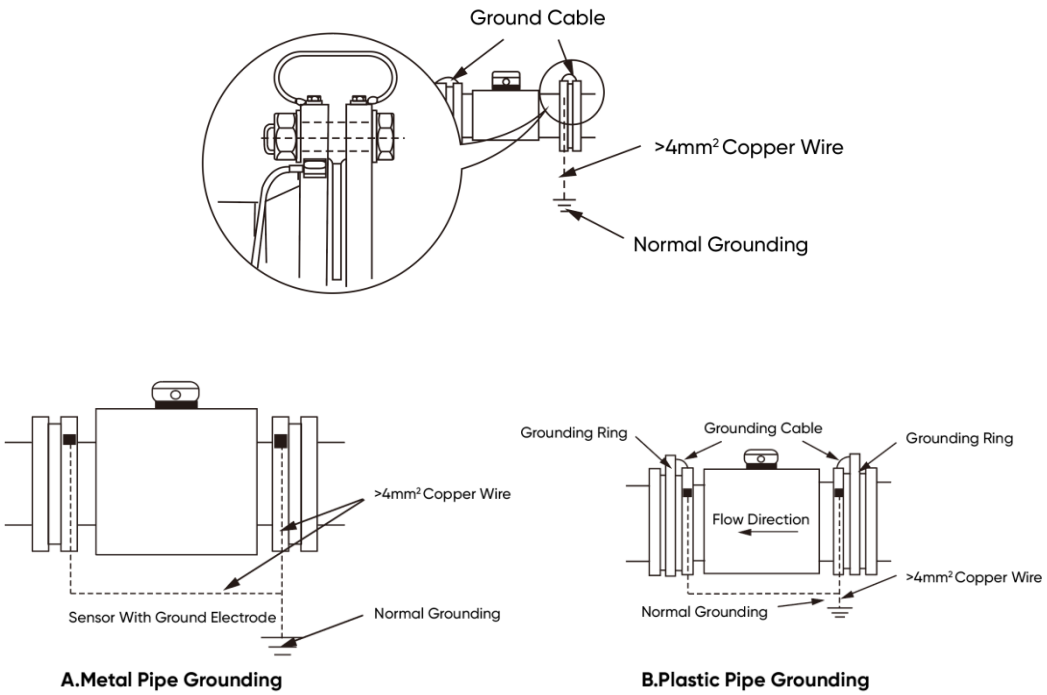


Table 7. Lining Material Selection (G)

Code	General Characteristics	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
2	Fluorinated ethylene propylene (FEP): 1. Hydrophobic and non-sticky. 2. Its corrosion resistance is second only to PFA. 3. Good resistance to negative pressure; When the negative pressure resistance requirement is high, metal mesh can be added to improve negative pressure resistance. 4. Poor abrasion resistance.	★		★	★		★	★	★	★	
3	Polytetrafluoroethylene (PTFE): 1. It is the material with the most stable chemical properties among plastics, resistant to boiling hydrochloric acid, sulfuric acid, nitric acid and aqua regia, as well as concentrated alkali and various organic solvents. Not resistant to corrosion by chlorine trifluoride, high temperature oxygen trifluoride, high flow rate liquid fluorine, liquid oxygen, and ozone. 2. Poor abrasion resistance. 3. Poor negative pressure resistance, easy to cause lining deformation or breakage, resulting in electrode leakage.	★	★		★	★		★		★	★

4	Polyurethane (PU): 1. Excellent abrasion resistance and elasticity; 2. Poor acid and alkali resistance;	★						★		★	
5	Fusible polytetrafluoroethylene (PFA): 1. Good hydrophobicity and non-stickiness, strong high temperature resistance. 2. Excellent corrosion resistance, resistant to strong acid, Alkali, organic solvents and various salt solutions. 3. Good resistance to negative pressure; When the negative pressure resistance requirement is high, metal mesh can be added to improve negative pressure resistance. 4. Poor abrasion resistance.	★			★			★		★	

Table 8. Lining Material Selection for Specific Sizing

		FE01				FE02				FE03			
		PTFE	PU	FEP	PFA	PTFE	PU	FEP	PFA	PTFE	PU	FEP	PFA
Flanged	10			★	★			★	★			★	★
	15	★		★	★	★		★	★	★		★	★
	20	★	★	★	★	★	★	★	★	★	★	★	★
	25	★	★	★	★	★	★	★	★	★	★	★	★
	32	★	★	★	★	★	★	★	★	★	★	★	★
	40	★	★	★	★	★	★	★	★	★	★	★	★
	50	★	★	★	★					★	★	★	★
	65	★	★	★	★					★	★	★	★
	80	★	★	★	★					★	★	★	★
	100	★	★	★	★					★	★	★	★
	125	★	★	★	★					★	★	★	★
	150	★	★	★	★					★	★	★	★

	200	★	★	★	★					★	★	★	★
	250	★	★	★	★					★	★	★	★
	300	★	★	★	★					★	★	★	★
	350	★	★	★	★					★	★	★	★
	400	★	★	★	★					★	★	★	★
	450	★	★	★	★					★	★	★	★
	500	★	★		★					★	★		★
	600									★			★
	700									★			
	800									★			
	900									★			
	1000									★			
	1200									★			
Wafer (Flangeless)	25	★			★								
	32	★			★								
	40	★			★								
	50	★			★					★			★
	65	★			★					★			★
	80	★			★					★			★
	100	★			★					★			★
	125	★			★					★			★
	150	★			★					★			★
	200	★			★					★			★
Hygienic	15			★				★					

	20			★				★				
	25			★				★				
	32			★				★				
	40			★				★				
	50			★								
	65			★								
	80			★								

Note: FM00 can select corresponding lining material in all sizing range.

Table 9. Medium Temperature Selection (H)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
0	AT ~ 80℃	★	★	★	★	★	★	★	★	★	★
2	AT ~ 110℃	★	★	★	★	★	★	★	★	★	★
3	AT ~ 140℃	★	★	★	★	★	★	★	★	★	★
4	AT ~ 180℃	★	★	★	★	★	★	★	★	★	★
5	-40℃ ~ 80℃	★	★	★	★	★	★	★	★	★	★

Note: AT refers to Ambient Temperature. If the difference temperature of the medium and the ambient is lager than 15℃, it is recommended to select the low temperature as -40℃ to avoid the condensation. Normally "AT" is enough.

Table 10. Pipeline Pressure Standards Selection (I)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
D1	PN6 (Default Value for	★	★	★	★	★	★	★	★	★	★

	DN1200 ~ DN2000)										
D2	PN10 (Default Value for DN200 ~ DN1000)	★	★	★	★	★	★	★	★	★	★
D3	PN16 (Default Value for DN80 ~ DN150)	★	★	★	★	★	★	★	★	★	★
D4	PN25	★	★		★	★		★		★	★
D5	PN40 (Default Value for DN10 ~ DN65)	★	★		★	★		★		★	★
D6	PN63	★	★		★	★		★		★	★
D7	PN100	★	★		★	★		★		★	★
D8	PN160	★	★		★	★		★		★	★
D9	PN250	★	★		★	★		★		★	★
J1	JIS 5K	★	★		★	★		★		★	★
J2	JIS 10K	★	★		★	★		★		★	★
J3	JIS16K	★	★		★	★		★		★	★
J4	JIS 20K	★	★		★	★		★		★	★
J5	JIS 30K	★	★		★	★		★		★	★

C1	ANSI CLASS 150#	★	★		★	★		★		★	★
C2	ANSI CLASS 300#	★	★		★	★		★		★	★

Table 11. Flanged Connection, Line Size, Pressure Standards, Lining Material, and Applicable Temperature

<table>
<tr><th rowspan="2">Line Size</th><th rowspan="2">Pressure (MPa)</th><th rowspan="2">Length (mm)</th><th colspan="4">Lining Material & Applicable Temperature</th></tr>
<tr><th>FEP</th><th>PFA</th><th>PTFE</th><th>PU</th></tr>
<tr><td>10</td><td rowspan="10">4.0</td><td rowspan="8">150</td><td rowspan="12">-40~140℃
(-40~284℉)</td><td rowspan="12">-40~180℃
(-40~356℉)</td><td>/</td><td rowspan="4">/</td></tr>
<tr><td>15</td><td rowspan="10"></td></tr>
<tr><td>20</td></tr>
<tr><td>25</td><td rowspan="9">-40~80℃
(-40~176℉)</td></tr>
<tr><td>32</td></tr>
<tr><td>40</td></tr>
<tr><td>50</td><td rowspan="4">200</td></tr>
<tr><td>65</td></tr>
<tr><td>80</td></tr>
<tr><td>100</td><td rowspan="2">1.6</td><td rowspan="2">250</td><td rowspan="2">-40~80℃</td></tr>
<tr><td>125</td></tr>
</table>

150		300			(-40~176°F)	
200		350				
250	1.0	400				
300		450				
350						
400		500				
450		600				
500						
600						
700		700	/	/		/
800		800				
900		900				
1000		1000				
1200	0.6	1200				
1400		1400				
1600		1600				
1800		1800				

2000		2000				

Table 12. Flangeless (Wafer) Connection, Line Size, Lining Material, and Applicable Temperature

Line Size	Lining Material & Applicable Temperature			
	FEP	PFA	PTFE	PU
50	-40~140℃ (-40~284℉)	-40~180℃ (-40~356℉)	-40~110℃ (-40~230℉)	-40~80℃ (-40~176℉)
65				
80				
100				
125				
150				
200				

Table 13. Hygienic Connection, Line Size, Lining Material, and Applicable Temperature

Line Size	Lining Material & Applicable Temperature
	FEP
15	-40~140℃（-40~284℉）
20	
25	
32	
40	
50	
65	
80	

Table 14. Sensor Protection Degrees Selection (J)

Code	Description	Sensor + Integral Mount Transmitter	Sensor + Remote Mount Transmitter
A	IP65	★	★
B	IP67	★	★
C	IP68		★

Note: For remote mount transmitter, the highest protection degree is IP67.

IP65 (Spray Type): It is allowed to spray water from any direction with a tap, the water pressure is 30kPa, the water output is 12.5L/Min, and the nozzle is 3m away from the instrument.

IP67 (Immersion Type): The instrument can be completely immersed in water for a short time (1m underwater), and the duration is 30Min.

IP68 (Submersible Type): It can work underwater for a long time (5m underwater), and the maximum depth is negotiated with the manufacturer.

The protection level should be selected according to the above requirements and the actual conditions of the instrument. When no protective box is designed for outdoor use, it should be considered that the instrument above IP66 should be installed in a cool place. Avoid direct sunlight, and special attention should be paid when used in hot climate areas. Avoid direct exposure to the climate environment.

If the instrument is installed below the ground and is often flooded or the instrument is installed on the ground with high air humidity or steam exposure environment, it is advisable to use a remote mount transmitter, the sensor is IP68, and the transmitter is placed in a protective box or indoors.

Table 15. Transmitter Structure Type Selection (K)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
0	Integral Mount 	★	★	★	★	★	★	★	★	★	★
S	Remote Mount  	★	★	★	★	★	★	★	★	★	★

Note: If the Temp. Range is chosen as "AT ~ 140℃" or "AT ~ 180℃", please choose Remote Mount as the structure Type.

Table 16. Output Signal Selection (L)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
1	4 ~ 20 mA + pulse + MODBUS	★	★	★	★	★	★	★	★	★	★
2:	4 ~ 20 mA + pulse + MODBUS + HART	★	★	★	★	★	★	★	★	★	★

Table 17. Power Supply Selection (M)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
D	DC24V (-20%~+15%)	★	★	★	★	★	★	★	★	★	★
A	220V AC (-15%~+10%), 47.5~63Hz	★	★	★	★	★	★	★	★	★	★

Table 18. Flameproof Selection (N)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
N	Non-explosion-proof	★	★	★	★	★	★	★	★	★	★
D	Explosion-proof (NEPSI)	★	★	★	★	★	★	★	★	★	★

Table 19. Accuracy Selection (O)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
A	0.5% (Default)	★	★	★	★	★	★	★	★	★	★
B:	0.3%	★	★	★							

Note: For FE02 series, the accuracy is 0.5% when the flow rate is above 0.3m/s, and 0.5%+1mm/s when it is less than 0.3m/s;

Table 20. Flange (ring) Material Selection (P)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
T1	Carbon Steel (Default)	★			★			★		★	
T2	304 Stainless Steel	★			★			★		★	

T4	316L Stainless Steel	★			★			★		★	

Table 21. Sensor Housing Material Selection (Q)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
E1	Carbon Steel (Default)	★	★		★	★		★		★	★
E2	304 Stainless Steel	★	★	★	★	★	★	★	★	★	★
E4	316L Stainless Steel	★	★	★	★	★	★	★	★	★	★

Note: Table 20 and Table 21 are related. The flange ring material and sensor housing material need to be the same.

Table 22. Sensor Appearance Processing Selection (R)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
V1	Polyurethane Coating (Default)	★	★	★	★	★	★	★	★	★	★
V2	Anti-Corrosion Epoxy Coating	★	★	★	★	★	★	★	★	★	★
V3	Enhanced Anti-Corrosion Coating	★	★	★	★	★	★	★	★	★	★
V4	Polishing			★			★		★		

Table 23. Signal Line Length Selection for Remote Mount Transmitter (S)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
N	None (Default)	★	★	★	★	★	★	★	★	★	★
L10	10 meters	★	★	★	★	★	★	★	★	★	★
L15	15 meters	★	★	★	★	★	★	★	★	★	★
L20	20 meters	★	★	★	★	★	★	★	★	★	★
L25	25 meters	★	★	★	★	★	★	★	★	★	★
L30	30 meters	★	★	★	★	★	★	★	★	★	★
L50	50 meters	★	★	★	★	★	★	★	★	★	★
L70	70 meters	★	★	★	★	★	★	★	★	★	★
L90	90 meters	★	★	★	★	★	★	★	★	★	★
LA5	150 meters	★	★	★	★	★	★	★	★	★	★

The connecting cable between the sensor and the transmitter is a special multi-shielded cable. The cable length in the model specification table refers to this cable. Its length is related to the conductivity of the medium. The maximum length is 5 times the minimum conductivity, but generally does not exceed 100m (the length exceeding the limit is negotiated with the manufacturer). The connecting cable between the sensor and the transmitter is generally required to be protected by an iron pipe during on-site installation. The cable is not allowed to be connected continuously. If an accidental break or extension occurs, please purchase a special junction box with sealant to extend it.

Table 24. Sealing Plug Selection (T)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
W1	Nylon Cable Connector (Default)	★	★	★	★	★	★	★	★	★	★
W3	M20*1.5 Wire Conduit Interface	★	★	★	★	★	★	★	★	★	★
W4	G1/2 Conduit Interface	★	★	★	★	★	★	★	★	★	★
W5	1/2NPT Conduit Interface	★	★	★	★	★	★	★	★	★	★
W6	Metal Cable Gland	★	★	★	★	★	★	★	★	★	★

Table 25. PIO Configuration (U)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
F1	Frequency Output (Passive Pulse) (Default)	★	★	★	★	★	★	★	★	★	★
F2	Frequency Output (Active Pulse)	★	★	★	★	★	★	★	★	★	★
F3	Empty Pipe Alarm	★	★	★	★	★	★	★	★	★	★
F4	Contact Input	★	★	★	★	★	★	★	★	★	★
F5	Batch Control	★	★	★	★	★	★	★	★	★	★
F6	Upper Limit Alarm	★	★	★	★	★	★	★	★	★	★
F7	Lower Limit Alarm	★	★	★	★	★	★	★	★	★	★

F8	Flow Direction Alarm	★	★	★	★	★	★	★	★	★	★

Pulse output: It is pulse signal output;

Empty Pipe Alarm: When the flow meter reports an empty pipe, it outputs a switch signal;

Contact Input: Receive a switch signal to clear the accumulated value;

Batch Control: When the accumulated amount reaches the set amount, a switch signal will be output;

Upper/Lower Limit Alarm: When the flow reaches the upper and lower limits, a switch alarm signal is output;

Flow Direction Alarm: When the flow direction is reversed, a switch alarm signal is output;

Table 26. Sealing Gasket Material Selection (V)

Code	Description	00F	00J	00K	01F	01J	01K	02F	02K	03F	03J
N	None (Default)	★	★		★	★		★		★	★
H2	PTFE	★	★		★	★		★		★	★
H3	Metal PTFE Spiral Wound Gasket	★	★		★	★		★		★	★
H4	O-Ring			★			★		★		

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Features and Specification

Electromagnetic Sensor for Standard Process

						
	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter
	Flanged Sensor		Wafer (flangeless) Sensor		Hygienic Sensor	
Basic Error	0.3% or ± 0.5% of indicated value					
Diameter	DN10~DN1200		DN25~DN200		DN15~DN80	
Electrode Materials	316L Stainless Steel, Hastelloy C, Titanium, Tantalum, Tungsten Carbide, Platinum-Iridium Alloy				316L Stainless Steel	
Grounding Method	Grounding Electrode, 304 Grounding Ring, 304 Grounding Ring with Neck, 316L Grounding Ring, HC Grounding Ring, Ti Grounding Ring, Ta Grounding Ring				NA	
Lining Material	FEP , PTFE , PU , PFA		PTFE		FEP	
Ambient Temperature Range	-25 ℃ ~55 ℃					
Output Signal	4 ~ 20 mA + Pulse + MODBUS ; 4 ~ 20 mA + Pulse + MODBUS + HART (4mA~20mA analog output is active output)					
Power Supply	DC 24V (-15%~+20%); AC 220V (-15%~+10%), 47~63Hz					
Conductivity	≥ 5μS/cm					
Ambient Temperature Influence	< ± 0.15%/10 ℃ (Accuracy: 0.3%) or < ± 0.25%/10 ℃ (Accuracy: 0.5%)					
Repeatability	≤± 0.1% (Accuracy: 0.3%) or ± 0.16% (Accuracy: 0.5%)					
Analog Output Error	≤± 0.016mA					
Measuring Range Flow Rate	0.5~ 12m/s					

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Electromagnetic Sensor for Low Conductivity Process

						
	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter
	Flanged Sensor		Wafer (flangeless) Sensor		Hygienic Sensor	
Basic Error	0.5% of indicated value					
Diameter	DN10~DN500		DN25~DN200		DN15~DN80	
Electrode Materials	316L Stainless Steel, Hastelloy C, Titanium, Tantalum, Tungsten Carbide, Platinum-Iridium Alloy				316L Stainless Steel	
Grounding Method	Grounding Electrode, 304 Grounding Ring, 304 Grounding Ring with Neck, 316L Grounding Ring, HC Grounding Ring, Ti Grounding Ring, Ta Grounding Ring				NA	
Lining Material	FEP , PTFE , PU , PFA		PTFE		FEP	
Ambient Temperature Range	-25 ℃ ~55 ℃					
Output Signal	4 ~ 20 mA + Pulse + MODBUS ; 4 ~ 20 mA + Pulse + MODBUS + HART (4mA~20mA analog output is active output)					
Power Supply	DC 24V (-15%~+20%); AC 220V (-15%~+10%), 47~63Hz					
Conductivity	≥ 1μS/cm					
Ambient Temperature Influence	<±0.25%/10 ℃					
Repeatability	≤0.16%					
Analog Output Error	≤±0.016mA					
Measuring Range Flow Rate	0.5~ 12m/s					

Electromagnetic Sensor for Micro Flow Process

				
	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter
	Flanged Sensor		Hygienic Sensor	
Basic Error	0.5% of indicated value (0.3~12m/s); 0.5%+1mm/s (0.01~0.3m/s)			
Diameter	DN10~DN40		DN15~DN40	
Electrode Materials	316L Stainless Steel, Hastelloy C, Titanium, Tantalum, Tungsten Carbide, Platinum-Iridium Alloy		316L Stainless Steel	
Grounding Method	Grounding Electrode, 304 Grounding Ring, 304 Grounding Ring with Neck, 316L Grounding Ring, HC Grounding Ring, Ti Grounding Ring, Ta Grounding Ring		NA	
Lining Material	FEP , PTFE , PU , PFA		FEP	
Ambient Temperature Range	-25℃~55℃			
Output Signal	4 ~ 20 mA + Pulse + MODBUS ; 4 ~ 20 mA + Pulse + MODBUS + HART (4mA~20mA analog output is active output)			
Power Supply	DC 24V (-15%~+20%); AC 220V (-15%~+10%), 47~63Hz			
Conductivity	≥ 5μS/cm			
Ambient Temperature Influence	<±0.25%/10 ℃			
Repeatability	≤0.16%			
Analog Output Error	≤±0.016mA			
Measuring Range Flow Rate	0.01~ 12m/s			

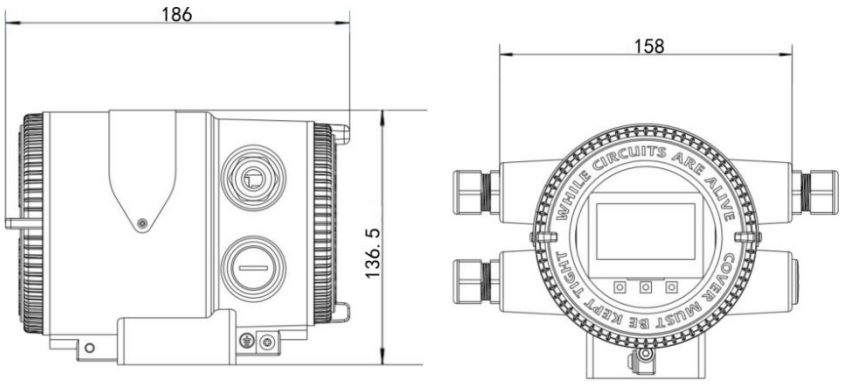
Electromagnetic Sensor for Slurry Process

				
	Integral Mount Transmitter	Remote Mount Transmitter	Integral Mount Transmitter	Remote Mount Transmitter
	Flanged Sensor		Wafer (flangeless) Sensor	
Basic Error	0.5% of indicated value			
Diameter	DN10~DN1200		DN50~DN200	
Electrode Materials	316L Stainless Steel, Hastelloy C, Titanium, Tantalum, Tungsten Carbide, Platinum-Iridium Alloy			
Grounding Method	Grounding Electrode, 304 Grounding Ring, 304 Grounding Ring with Neck, 316L Grounding Ring, HC Grounding Ring, Ti Grounding Ring, Ta Grounding Ring			
Lining Material	FEP , PTFE , PU , PFA		PTFE	
Ambient Temperature Range	-25℃~55℃			
Output Signal	4 ~ 20 mA + Pulse + MODBUS ; 4 ~ 20 mA + Pulse + MODBUS + HART (4mA~20mA analog output is active output)			
Power Supply	DC 24V (-15%~+20%); AC 220V (-15%~+10%), 47~63Hz			
Conductivity	≥ 5μS/cm			
Ambient Temperature Influence	<±0.25%/10 ℃			
Repeatability	≤0.16%			
Analog Output Error	≤±0.016mA			
Measuring Range Flow Rate	1~ 12m/s			

Dimensional Drawings

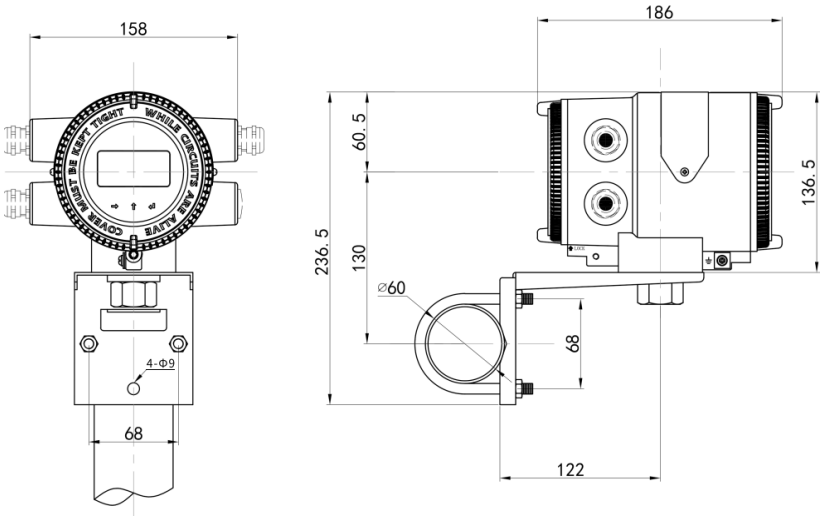
Integral Mount Transmitter

Unit: mm



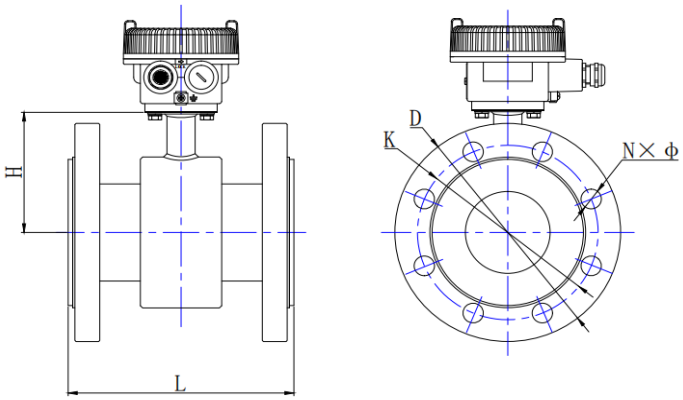
Remote Mount Transmitter (With Bracket)

Unit: mm



Flanged Sensor

Unit: mm



Size (mm)	Nominal Pressure (MPa)	Overall Dimensions (mm)			Connection Dimensions (mm)			Weight (Kg)
		L	D	H	K	N (No. of holes)	Φ (Diameter)	
10	4.0	150	90	84	60	4	14	3.5
15			95	84	65			
20			105	84	75			4.5
25			115	90	85			
32			140	93	100	4	18	6.5
40			150	93	110			7.0
50		200	165	100	125			9.5
65			185	113	145	8	18	12
80	1.6		200	225.5	160			15
100		250	220	126	180			17
125			250	138	210			21
150		300	285	151	240	8	22	28
200	1.0	350	340	190	295			36
250		400	395	222	350	12	22	49
300		450	445	248	400			61
350			505	264	460	16	22	79
400		500	565	299	515	16	26	99
450		600	615	325	565	20	26	121
500			670	360	620			143
600			780	412	725	20	30	187
700		700	895	445	840	24	30	260
800		800	1015	492	950	24	33	342
900		900	1115	555	1050	28	33	420
1000		1000	1230	605	1160	28	36	503
1200	0.6	1200	1405	705	1340	32	33	666

Size (mm)	Nominal Pressure (Class)	Overall Dimensions (mm)			Connection Dimensions (mm)			Weight (kg)
		L	D	H	K	N (No. of holes)	Φ (Diameter)	
15	Class 300	200	95	84	66.7	4	18	4.8
20			115	84	82.6			5.1
25			125	90	88.9			5.5
32			135	93	98.4			6.7
40			155	93	114.3	4	22	7.5
50			165	100	127	8	18	9.1
65			190	113	149.2	8	22	11.2
80			210	113	168.3			13
100		250	255	126	200			15
125			280	138	235			19
150		300	320	151	269.9	12	22	24
200		350	380	190	330.2	12	26	37
250		400	445	222	387.4	16	30	50
300		450	520	248	450.8	16	33	70
350			585	264	514.4	20	33	92
400		500	650	299	571.5	20	36	115
450		600	710	325	628.6	24	36	140
500			775	360	685.8			160
600			915	412	812.8	24	42	188
15	Class 150	200	90	84	60.3	4	16	4.6
20			100	84	69.9			4.9
25			110	90	79.4			5.3
32			115	93	88.9			6.5
40			125	93	98.4			7.2
50			150	100	120.7	4	18	8.8
65			180	113	139.7			10.8
80			190	113	152.4			12.5
100		250	230	126	190.5			14
125			255	138	215.9	8	22	18
150		300	280	151	241.3			22
200		350	380	190	330.2	12	26	36
250		400	445	222	387.4	16	30	50
300		450	520	248	450.8	16	33	71
350			585	264	514.4	20	33	90
400		500	650	299	571.5	20	36	112
450		600	710	325	628.6	24	36	138
500			775	360	685.8			158
600			915	412	812.8	24	42	185

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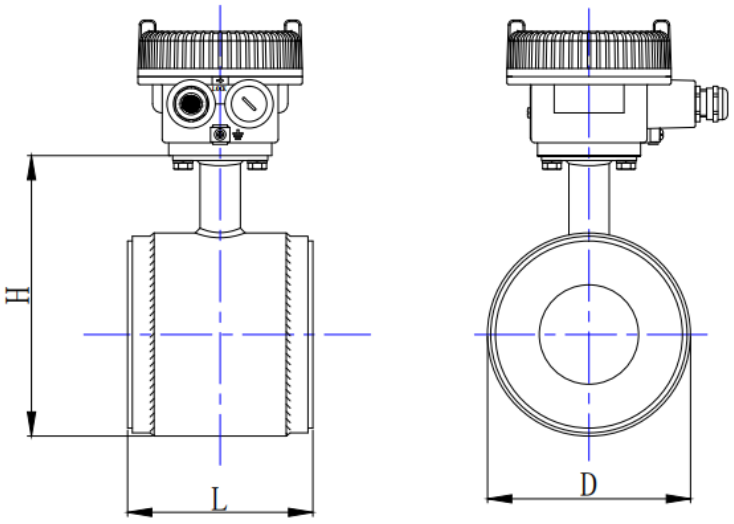
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Size (mm)	Nominal Pressure (JIS)	Overall Dimensions (mm)			Connection Dimensions (mm)			Weight (kg)
		L	D	H	K	N (No. of holes)	Φ (Diameter)	
10	30K	200	110	84	75	4	19	4.6
15			115	84	80			4.8
20			120	84	85			5.1
25			130	90	95			5.5
32			140	93	105			6.7
40			160	93	120	4	23	7.5
50		250	165	100	130	8	19	9.1
65			200	113	160	8	23	11.2
80			210	113	170			13
100		250	240	126	195	8	25	15
125			275	138	230			19
150		300	325	151	275	12	27	24
200		350	370	190	320			37
250		400	450	222	390	12	33	50
300		450	515	248	450	16	33	70
350			560	264	495			75
400		500	630	299	560	16	39	95
10	20K	200	90	84	65	4	15	4.5
15			95	84	70			4.6
20			100	84	75			4.9
25			125	90	90	4	19	5.3
32			135	93	100			6.5
40			140	93	105			7.2
50		200	155	100	120	8	19	8.8
65			175	113	140			10.8
80			200	113	160	8	23	12.5
100		250	225	126	185	8	23	14
125			270	138	225	8	25	18
150		300	305	151	260	12	25	22
200		350	350	190	305			32
250		400	430	222	380	12	27	44
300		450	480	248	430	16	27	61
350			540	264	480	16	33	79
400		500	605	299	540			99
450		600	675	325	605	20	33	118
500			730	360	660			137
600			845	412	770	24	39	165
10	16K	150	90	84	65	4	15	4.5
15			95	84	70			4.6
20			100	84	75			4.9
25			125	90	90	4	19	5.3
32			135	93	100			6.5
40			140	93	105			7.2
10		200	90	84	65	4	15	4.5
15			95	84	70			4.6
20			100	84	75			4.9
25			125	90	90	4	19	5.3
32			135	93	100			6.5
40			140	93	105			7.2
50			155	100	120	8	19	8.8
65			175	113	140			10.8

80			200	113	160	8	23	12.5
100		250	225	126	185			14
125			270	138	225	8	25	18
150		300	305	151	260	12	25	22
200		350	350	190	305	12	25	32
250		400	430	222	380	12	27	44
300		450	480	248	430	16	27	61
350			540	264	480	16	33	79
400		500	605	299	540			99
450		600	675	325	605	20	33	118
500			730	360	660			137
600			845	412	770	24	39	165
10	10K	200	90	84	65	4	15	4.5
15			95	84	70			4.6
20			100	84	75			4.9
25			125	90	90	4	19	5.3
32			135	93	100			6.5
40			140	93	105			7.2
50			155	100	120			8.8
65			175	113	140			10.8
80			185	113	150	8	19	12.5
100		250	210	126	175			14
125			250	138	210	8	23	18
150		300	280	151	240			22
200		350	330	190	290	12	23	32
250		400	400	222	355	12	25	44
300		450	445	248	400	16	25	61
350			490	264	445			79
400		500	560	299	510	16	27	99
450		600	620	325	565	20	27	118
500			675	360	620			137
600			795	412	730	24	33	165
10	5K	150	75	84	55	4	12	4.5
15			80	84	60			4.6
20			85	84	65			4.9
25			95	90	75			5.3
32			115	93	90	4	15	6.5
40			120	93	95			7.2
10		200	75	84	55	4	12	4.5
15			80	84	60			4.6
20			85	84	65			4.9
25			95	90	75			5.3
32			115	93	90	4	15	6.5
40			120	93	95			7.2
50			130	100	105			4.5
65			155	113	130			4.6
80			180	113	145	4	19	12.5
100		250	200	126	165	8	19	14
125			235	138	200			18
150		300	265	151	230			22
200		350	320	190	280	8	23	32
250		400	385	222	345	12	23	44
300		450	430	248	390	12	23	61
350			480	264	435	12	25	79
400		500	540	299	495	16	25	99
450		600	605	325	555			118

500			655	360	605	20	25	137
600			770	412	715	20	27	165

Wafer (flangeless) Sensor

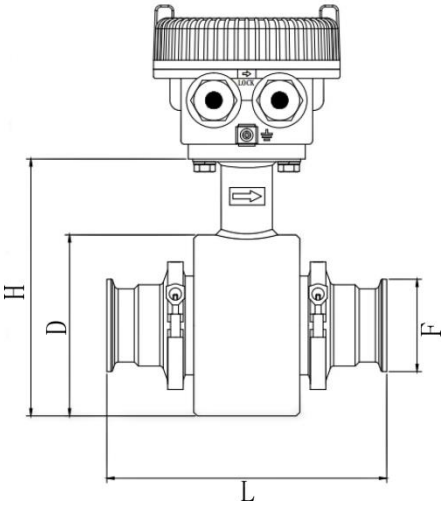


Size (mm)	Nominal Pressure (MPa)	Overall Dimensions (mm)			Weight (Kg)
		L	D	H	
25	4.0/2.5	90	67	116	2.7
32		100	76	125	3.4
40		100	82	131	3.7
50		115	96	145	5
65			116	165	6
80		130	127	176	6.5
100	1.6	155	147	196	9
125			177	226	11
150		185	202	251	13.5
200	1.0	215	257	306	21

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Hygienic Sensor

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Size (mm)	Overall Dimensions (mm)			F Chuck Outer Diameter		
	L	D	H	DIN32676	ISO2852	3A
10	150	76	113	34	34	25
15				34	34	25
20				34	34	/
25		84	121	50.5	50.5	50.5
32		91	128	50.5	50.5	/
40		96	133	50.5	50.5	50.5
50	165	108	145	64	64	64
65	180	120	157	91	77.5	77.5
80	200	132	169	106	91	91

Instrument Working Environment

The instrument working environment is divided into two types: general workplace and hazardous workplace. General workplace refers to a safe place without flammable gas, explosive substances. The working environment temperature is below 65℃, and the upper limit of the medium temperature is divided into 80℃, 140℃ and 180℃, where the transmitter can be selected as integral mount or remote mount (remote mount is recommended when the medium temperature is higher than 80℃). Hazardous places refer to places where flammable gas, explosive substances exist. The working environment temperature should not be higher than 60℃, and the medium temperature should not be higher than 80-130℃ (depending on the explosion-proof temperature level). The working temperature of the transmitter should not be higher than 65℃. The housing and flange of the sensor body are completed by integral welding, which can meet the working environment mentioned above.

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Ordering Code

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Electromagnetic Flow meter Selection Table

X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Series
00 Standard
01 Low conductivity
02 Micro flow
03 Slurry

Connection
Flanged F
Wafer (flangeless) J
Hygienic K

Electrode Material
316L S
HC C
Ti L
Ta T
WC W
Pl Ir alloy Y

Grounding
No grounding (dual electrode) N
S: 304 grounding ring S
304 grounding ring with neck A
Ground electrode, three electrodes B
316L grounding ring F
HC grounding ring C
Ti grounding ring L
Ta grounding ring T

Lining Material
FEP 2
PTFE 3
PU 4
PFA 5

Temp. Range
AT~80℃ 0
AT~110℃ 2
AT~140℃ 3
AT~180℃ 4
-40℃~80℃ 5

Process Connection Pressure Standard
PN6 (DN1200~DN2000) D1
PN10 (DN200~DN1000) D2
PN16 (DN80~DN150) D3
PN25 D4
PN40 (DN10~DN65) D5
PN63 D6
PN100 D7
PN160 D8
PN250 D9

JIS 5K J1
JIS 10K J2
JIS 16K J3
JIS 20K J4
JIS 30K J5

ANSI CLASS 150# C1
ANSI CLASS 300# C2

Sensor Protection Rating
IP65 A
IP67 B
IP68 C

Structure Type
Integral Mount O
Remote Mount S

Output Signal
4~20 mA + pulse + MODBUS 1
4~20 mA + pulse + MODBUS + HART 2

Power Supply
DC24V D
220V AC A

Flameproof
N Non-explosion-proof
D Explosion-proof (NEPSI)

Accuracy
A 0.5
B 0.3

Flange (ring) Material
T1 Carbon (default)
T2 304
T4 316L

Sensor Housing Material
E1 Carbon (default)
E2 304
E4 316L

Sensor Appearance Processing
V1 Polyurethane coating (default)
V2 Anti-corrosion epoxy coating
V3 Enhanced anti-corrosion coating
V4 Polishing

Signal Line Length for Remote Mount
N None (default)
L10 (10 meters)
L15 (15 meters)
L20 (20 meters)
L25 (25 meters)
L30 (30 meters)
L50 (50 meters)
L70 (70 meters)
L90 (90 meters)
LA5 (150 meters)

Sealing Plug
W1 Nylon cable connector (default)
W3 M20*1.5 wire conduit interface
W4 G1/2 conduit interface
W5 1/2NPT conduit interface
W6 Metal cable gland

PIO Configuration
F1 Frequency output (passive pulse) (default)
F2 Frequency output (active pulse)
F3 Empty pipe alarm
F4 Contact input
F5 Batch Control
F6 Upper limit alarm
F7 Lower limit alarm
F8 Flow alarm

Sealing Gasket Material
N None(default)
H2 PTFE
H3 Metal PTFE spiral wound gasket
H4 O-ring (Only for Hygienic Connection)

Matching Flange Material
N None(default)

Bolt & Nut Material
N None

HIKMICRO

Electromagnetic Flow Meter

Hikmicro Industrial
HIKMICRO
hikmicro_industrial
www.hikmicrotech.com
HIKMICRO Industrial
info@hikmicrotech.com