

FME100 SERIES ELECTROMAGNETIC FLOWMETER

FEATURES

- ◎ Suitable for various measuring medium.
- ◎ High precision, excellent stability, bidirectional measurement
- ◎ Output 4-20mA, Pulse, RS485, RS232, HART, Modbus
- ◎ Self-diagnosis alarms, no-load detection alarms, limit alarms etc.
- ◎ Nominal pressure from 0.6MPa to 4MPa.
- ◎ Protection IP65/IP68.



INTRODUCTION

The FME100 Series Electromagnetic Flowmeter is a highly accurate and durable flow measurement instrument designed for conductive liquids, including water, acids, alkalis, seawater, and other corrosive or impure fluids. It offers precise flow measurement with no moving parts, ensuring minimal maintenance and reliable performance over time.

This flowmeter is ideal for a wide range of applications across various industries, including petrochemical, iron & steel Metallurgy, water supply & drainage, irrigation, water treatment & environmental protection, paper making, food & pharmaceuticals.

The FME Series provides robust, reliable, and cost-effective flow measurement for industries handling corrosive and conductive liquids.

SPECIFICATIONS

Diameter(mm)	DN10~DN1600
Maximum flow speed	15m/s
Accuracy	0.5%, 0.2%
Nominal Pressure	1.0MPa, 1.6MPa, 2.5MPa, 4.0MPa
Conductivity	≥ 5uS/cm
Power supply	85V~264V AC, 18V~30V DC
Lining material	PTFE, PU, CR, PFA, F46, IR
Electrode form	Standard form, scraper form, detachable form and grounding electrode
Electrode material	316L, Hastelloy, titanium, tantalum, platinum iridium alloy
Medium temperature	Neoprene(CR): 0° C~80° C Polytetrafluoroethylene (PTFE): 0° C~120° C Perfluoroethylene Propylene Copolymer (FEP): 0° C~120° C Soluble Polytetrafluoroethylene (PFA): -10° C~180° C Polyurethane(PU): -20° C~60° C

Ambient temperature	-25° C~+60° C
Protection	Integrated Type:IP65 Split type: IP65, IP67, IP68
Analog output	Standard output (4-20mA), Pulse/frequency 2KHz standard,5KHz max
Digital communication	RS485, RS232,HART, Modbus
Electrical connection	M20×1.5 seal, G1/2, NPT1/2
Electrode quantity	3 electrodes(2 measurement electrodes +1 grounding electrode)
Housing materials	Carbon steel, stainless steel
Distance/cable length (Divided type)	Standard 10 meters, 1~300m optional

ELECTRODE MATERIALS

The electrodes are used to obtain the electrical signal for flow measurement and come into direct contact with the measured medium. Therefore, when selecting electrode materials, it is important to consider their compatibility with the medium, including factors such as corrosion resistance, passivation, and wear resistance.

A variety of electrode materials are available (including Stainless Steel 316L, Hastelloy B (HB), Hastelloy C (HC), Titanium (Ti), Tantalum (Ta), Platinum (Pt), Tungsten Carbide (WC), etc.) to suit different measurement media.

The selection of electrode materials should be based on the corrosiveness of the measured medium. Please refer to the following table on the corrosion resistance and application range of electrode materials for guidance (for reference only).

Electrode materials	Application
Stainless steel 316L	Suitable for:Domestic/industrial water, wastewater, weak acid and alkali solutions, and concentrated nitric acid at room temperature. Not suitable for:Hydrofluoric acid, hydrochloric acid, chlorine, bromine, iodine, and similar media.
Hastelloy B	Suitable for: Certain concentrations of hydrochloric acid, hydrofluoric acid, and other non-oxidizing acids, as well as oxidizing salt solutions and alkaline solutions such as sodium hydroxide with concentrations not lower than 70%. Not suitable for: Oxidizing acids such as nitric acid.
Hastelloy C	Suitable for:Oxidizing acids such as nitric acid, mixed acids, or corrosive media containing sulfuric acid mixtures; also resistant to corrosion from oxidizing salts and environments containing other oxidizing agents, such as hypochlorite solutions above room temperature. It offers excellent corrosion resistance to seawater. Not suitable for: Reducing acids like hydrochloric acid and environments containing chlorides.
Titanium (Ti)	Suitable for: Chlorides, hypochlorite solutions, seawater, and oxidizing acids. Not suitable for:Reducing acids such as hydrochloric acid and sulfuric acid.
Tantalum (Ta)	Suitable for:Concentrated hydrochloric acid, nitric acid, sulfuric acid, and most other acids, including boiling hydrochloric acid, boiling nitric acid, and sulfuric acid below 175° C. Not suitable for: Alkaline solutions, hydrofluoric acid, and fuming sulfuric acid.
Lining material	Suitable for:Various acid, alkali, and salt solutions (including fuming sulfuric acid and fuming nitric acid). Not suitable for: Aqua regia and ammonium salts.
Tungsten Carbide (WC)	Suitable for:Non-corrosive media and applications requiring high wear resistance.

LINING MATERIALS

- ◎ Lining materials are selected based on the corrosiveness, abrasiveness, and temperature of the measured medium. The performance of commonly used lining materials can be found in the corresponding lining material performance table.
- ◎ Rubber features excellent wear resistance and is widely used for measuring media such as water, industrial water, wastewater, sewage, slurry, mud, and fiber pulp.
- ◎ Polytetrafluoroethylene (PTFE) lining offers outstanding resistance to strong acids and alkalis. It also maintains high-temperature resistance without deformation or loss of insulation properties. Additionally, PTFE is non-stick, meaning it does not adhere to other substances and has a smooth surface. Therefore, PTFE linings are suitable for measuring high-viscosity media (such as syrup), media prone to scaling (such as alumina), highly corrosive media (such as sulfuric acid, nitric acid, hydrochloric acid, and phosphoric acid), high-temperature media, systems requiring regular steam cleaning, and hygienic applications such as food products (e.g., beer, milk, malt juice).

Lining materials	Performance	Application
Chloroprene Rubber (CR)	1. Resistant to oil, solvents, oxidation, and general corrosion from acids, alkalis, and salts. 2. Excellent elasticity and wear resistance, but relatively poor low-temperature resistance.	1. Suitable for non-strong acids, strong alkalis, and non-strong oxidizing media at temperatures from 0° C to +80° C. 2. Applicable for measuring wastewater and slurry.
Polyurethane Rubber (PU)	1. High hardness, resistant to oil and solvents, with excellent wear resistance and low-temperature performance. - Poor water resistance, prolonged exposure to water may cause hydrolysis.	1. Suitable for weakly corrosive media at temperatures between -20° C and +60° C. - Commonly used for measuring slurries.
Polytetrafluoroethylene (PTFE or F4)	1. PTFE is the most chemically stable plastic material, resistant to boiling hydrochloric acid, sulfuric acid, nitric acid, and aqua regia. It can also withstand concentrated alkalis and various organic solvents, but is not resistant to chlorine trifluoride, high-temperature oxygen trifluoride, high-flow liquid fluorine, liquid oxygen, or ozone. 2. Poor wear resistance. - Low resistance to negative pressure.	1. Suitable for temperatures between -25° C and +120° C. 2. Ideal for highly corrosive media, such as concentrated acids and alkalis. - Suitable for hygienic media.
Perfluorinated Ethylene Propylene (FEP or F46)	1. Exhibits hydrophobic and non-stick properties. 2. Corrosion resistance is second only to PTFE. 3. To improve resistance to negative pressure, a metal mesh can be added for enhanced performance. - Slightly lower wear resistance.	1. Suitable for non-abrasive media at temperatures between -25 ° C and +120° C. 2. Ideal for hygienic media.
PFA Plastic (PFA)	The properties are similar to those of PTFE.	1. Suitable for non-abrasive media at temperatures between -10 ° C and +180° C. - Ideal for hygienic media.

STRUCTURES

INTEGRATED TYPE

Under conditions where the field environment is relatively good, the integrated type is generally chosen, where the sensor and converter are combined into one unit. If installed in hard-to-reach locations, maintenance may be inconvenient. To prevent the electronic components of the intelligent converter from being affected by the pipeline fluid temperature. It is advised to avoid direct installation outdoors or in harsh environments. The default protection rating for the integrated type is IP65.

SPLIT TYPE

The split type is used in the following cases:

- When the ambient temperature or the converter surface temperature exceeds 55° C.
- When there is significant pipeline vibration.
- When the converter's aluminum housing may be severely corroded.
- In environments with high humidity or corrosive gases.
- When the flowmeter is installed in high altitudes or underground areas where commissioning is inconvenient.

The default protection rating for the split type is IP67. If immersion in water or other special conditions is not required, the split type with an IP65 protection rating can be selected, which should be specially specified when ordering.

NOTE

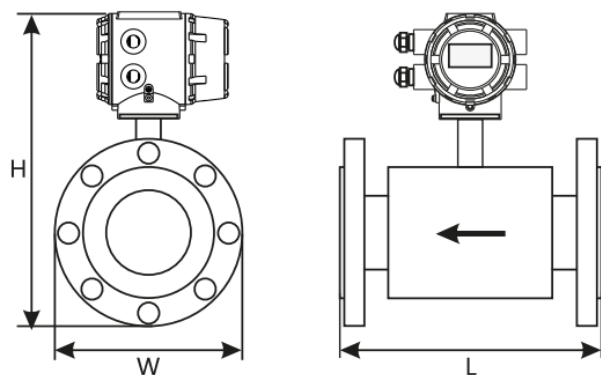
The sensor of the split-type electromagnetic flowmeter is installed on the process pipeline and can also be buried in underground water accumulation areas for long periods (IP68 type), while the intelligent converter is installed in the instrument room or near the sensor.

With a split-type electromagnetic flowmeter, the intelligent converter can be placed away from the harsh field environment, making it easier for operators to check, adjust, and set the instrument's working status.

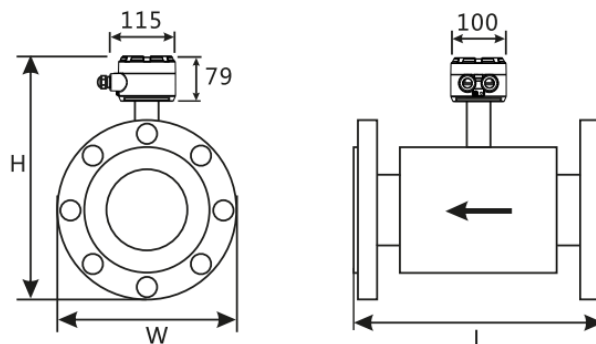
Consider the impact of cable transmission distance and installation, generally not exceeding 300 meters.

The connection cable between the sensor and the converter must be protected with conduit during field installation.

DIMENSIONS



Integrated type

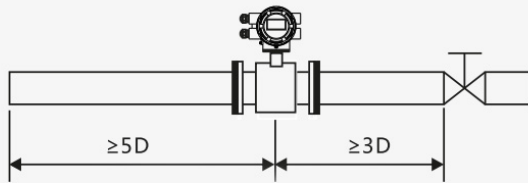


Split type

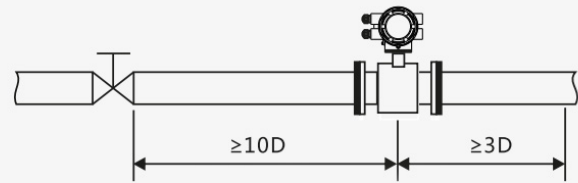
DN(mm)	Dimension(mm)			Weight (kg)
	L	W	H	
10	200	90	315	5.7
15		95	315	6
20		105	315	6.5
25		115	315	6.8
32		140	315	7.1
40		150	315	7.6
50		165	320	9.9
65		185	350	10.6
80		200	365	12.3
100	250	220	380	14.7
125		250	410	17.9
150		285	440	24.6
200	350	340	495	32.7
250	450	395	560	43.5
300	500	445	600	58
350	550	505	670	78
400	600	565	720	97
450		615	765	110
500		670	820	122
600		780	930	161
700	700	860	1010	241
800	800	975	1110	420
900	900	1075	1210	541
1000	1000	1175	1310	668
1200	1200	1405	1540	858
1400	1400	1630	1840	1085
1600	1600	1830	2076	1358

DN(mm)	Dimension(mm)			Weight (kg)
	L	W	H	
10	200	90	220	5.2
15		95	220	5.5
20		105	220	6
25		115	220	6.3
32		140	220	6.6
40		150	220	7.1
50		165	225	9.4
65		185	255	10.1
80		200	275	11.8
100	250	220	285	14.2
125		250	315	17.4
150		285	345	24.1
200	350	340	400	32.2
250	450	395	465	43
300	500	445	505	58
350	550	505	575	78
400	600	565	625	97
450		615	670	112
500		670	725	122
600		780	835	161
700	700	860	915	241
800	800	975	1015	420
900	900	1075	1115	541
1000	1000	1175	1215	668
1200	1200	1405	1445	858
1400	1400	1630	1745	1085
1600	1600	1830	1981	1358

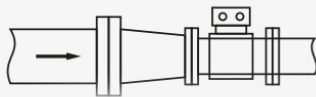
INSTALLATION



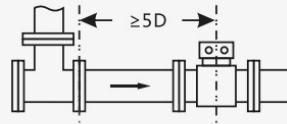
Valve installation downstream of the sensor



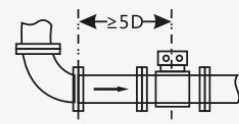
Valve installation upstream of the sensor



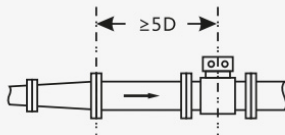
A conical tube can be treated as a straight pipe



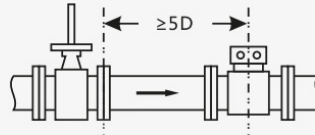
T-connector



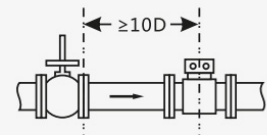
90° elbow



Expansion pipe

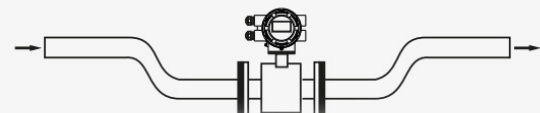
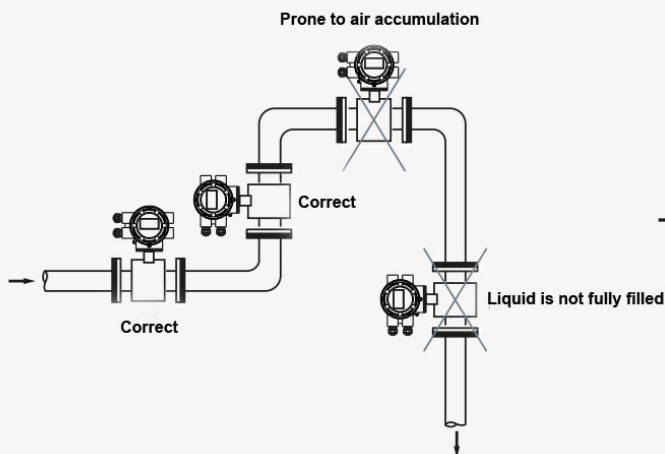


Fully open gate valve

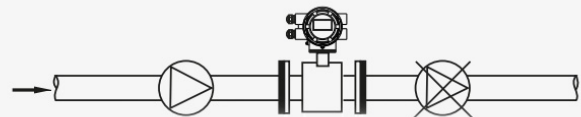


Various types of valves

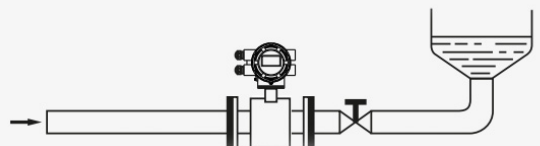
Straight Pipe Length Requirements



Sensor installation below the pipeline

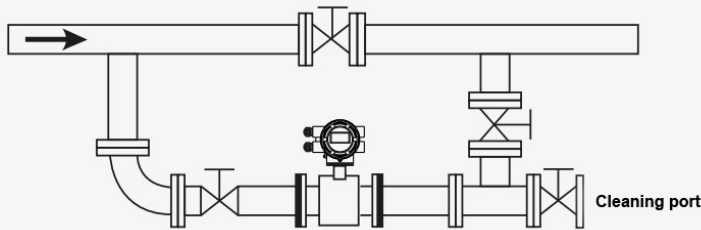


Electromagnetic flowmeters should not be installed on the suction side of the pump to prevent vacuum and negative pressure.



Sensor installation with backpressure downstream

Recommended installation location



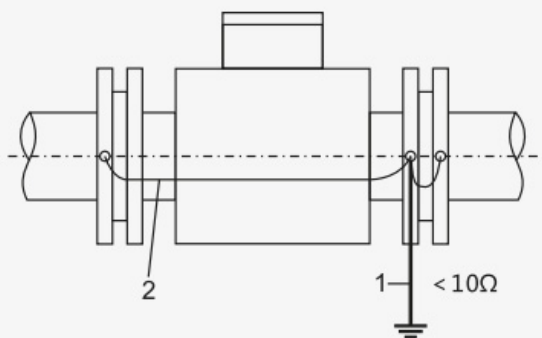
In cases where the pipeline needs to be cleaned but the fluid cannot be stopped, a bypass pipe must be installed to allow the system to continue operating during maintenance.

Connection for Easy Pipeline Cleaning

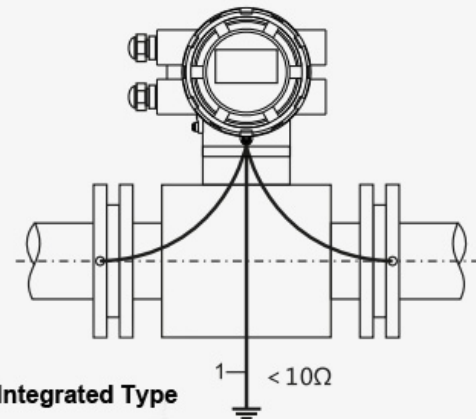
GROUNDING

The electromagnetic flowmeter sensor should be properly grounded, as the measurement accuracy of the flowmeter largely depends on the grounding effectiveness of the sensor.

The grounding of the sensor varies depending on the installation conditions.



Divided Type

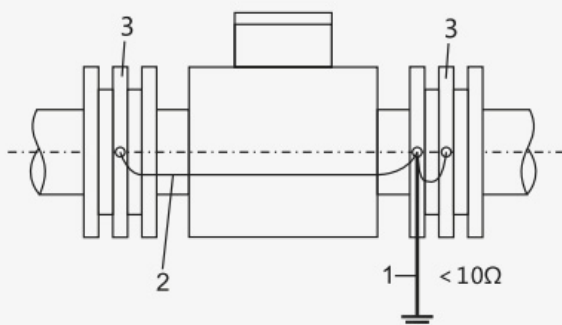


Integrated Type

1-Measurement Grounding 2-Grounding Conductor

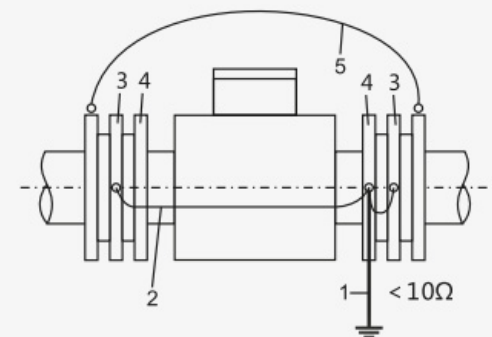
Note: Use 2.5mm² copper wire for the connection.

1. Grounding of the Sensor Installed on Metal Pipelines



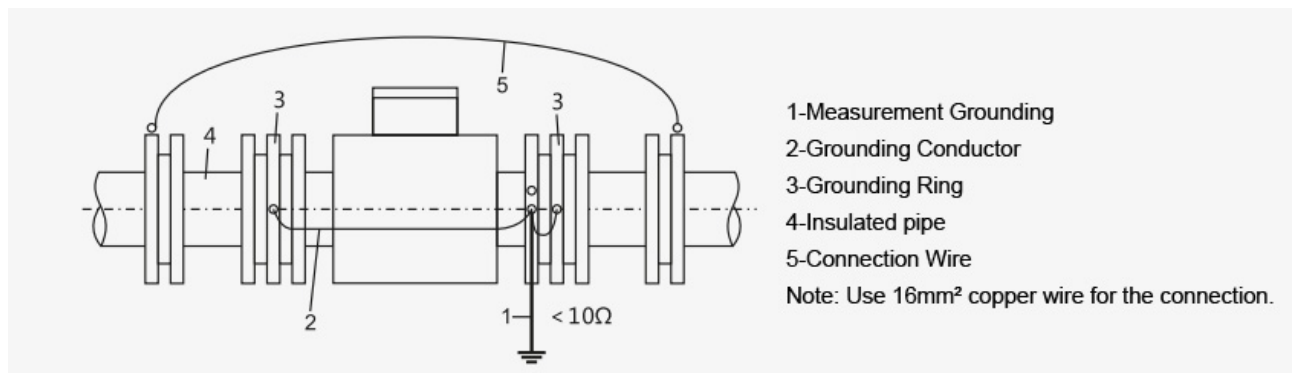
1-Measurement Grounding
2-Grounding Conductor 3-Grounding Ring
Note: Use 2.5mm² copper wire for the connection.

2. Grounding of the Sensor Installed on Insulated Pipelines



1-Measurement Grounding 2-Grounding Conductor
3-Grounding Ring 4-Bolt (Insulated) 5-Connection Wire
Note: Use 2.5mm² copper wire for the connection.

3. Grounding of the Sensor Installed on Cathodically Protected Pipelines



4. Grounding of the Sensor Installed in Areas with Strong Stray Currents on the Pipeline

ORDER FORMAT

FME100 - F80P10CS3LCRT08CPAD1

Structure	Model
Integrated type	FME100
Split type with QX03	FME103
Split type with QX05	FME105

Connection	Code
Flange	F
Clamp	C
Thread	T
Hygienic	H

Nominal diameter	Code
DN10mm	10
DN20mm	20
...	...
DN1600mm	1600

Nominal pressure	Code
4.0MPa(DN15-DN50)	P40
2.5MPa(DN15-DN50)	P25
1.6MPa(DN65-DN150)	P16
1.0MPa(DN200-DN1000)	P10
0.6MPa(DN700-DN1600)	P06

Housing material	Code
Carbon steel(Default)	CS
Stainless steel 304	S4
Stainless steel 316	3L

Code	Electrode material
3L	Stainless Steel 316L
HB	Hastelloy B (HB)
HC	Hastelloy C (HC)
TI	Titanium (Ti)
TA	Tantalum (Ta)
PT	Platinum (Pt)
WC	Tungsten Carbide (WC)

Code	Electrical connection
D1	M20x1.5(Default)
D2	1/2NPT female
D3	1/2NPT male
D4	G1/2 female
D5	G1/2 male

Code	Output signal
CP	4~20mA with pulse/frequency
CH	4~20mA+HART
C4	4~20mA+RS485
C2	4~20mA+RS232

Code	Power supply
D	24VDC
A	220VAC

Code	Medium temperature
T08	0~80°C
T12	0~120°C
T14	0~140°C
T16	0~160°C
T18	0~180°C

Code	Lining material
CR	Chloroprene Rubber (CR)
PU	Polyurethane Rubber (PU)
F4	PTFE /F4
F6	FEP/F46
PA	PFA Plastic (PFA)

Example:

FME100-F80P10CS3LCRT08CPAD1, Integrated type electromagnetic flow meter, DN80mm flange installation, pressure 1.0MPa, carbon steel housing material, 316L electrode material, CR lining material, max medium temperature 80°C, one 4~20mA output, one pulse frequency output, power supply 220VAC, M20x1.5 wiring port.

ORDERING NOTE

1. The measured medium must be a conductive fluid. Non-conductive media such as gases, oils, and organic solvents cannot be measured.
2. If accessories are required—such as mating flanges, metal gaskets, bolts, nuts, washers, or other special requests—these must be specified at the time of ordering.