DataSheet
Electromagnetic Flow Meter FMI100 Series - Integral

Introduction

The operation of FMI100 is based upon Faraday's Law, which states the voltage(E) induced across any conductor as it moves at right angles through a magnetic field(B) is proportional to the velocity(V) of that conductor. For FEM100, the conductor is the conductive medium.

E=KBVD
E = The voltage generated in a conductor.
K = Constant.
B = The magnetic field strength.
V = The velocity of the conductive medium.
D = The distance between probes.

E will be processed and output as standard electrical signal.

Characteristics

No moving parts - easy to maintain; No pressure drop due to no choked flow parts.

Medium conductivity could be as low as 5μs/cm. With appropriate lining, FMI100 is good for acidic, alkali, neutral salts solutions. High accuracy: ±0.5%, ±0.3%.

FMI100 is for volume flow rate measuring, which is independent to flow pressure, temperature, density and viscosity.

Since the induced voltage is generated in the space filling with magnetic field, which is pipe average cross-section area, only a shorter straight pipe section is needed upstream and downstream, typically 5D upstream and 3D downstream.

Corrosion resistance and abrasion resistance can be achieved by choosing appropriate materials for the wetted parts(lining and extrode).

Converter features: High reliability; high accuracy; lower power consumption; stable "Zero" output; easy to use; LCD displayer for flow velocity, total flow rate etc.

Dual direction measuring - forward flow and reverse flow.

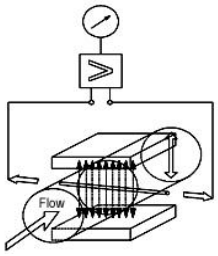
LCD displayer, easy to learn and use.

16 bit embedded processor: high speed, high accuracy, low frequency rectangle wave excitation; stable performance. lower power consumption.

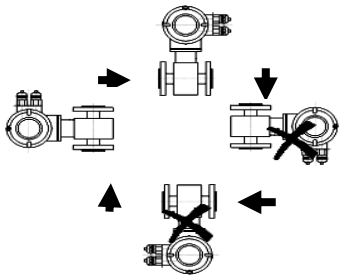
Strong interference resistance capability, high accuracy.

Digital output: RS485, RS232, Hart and Modbus

Construction



Mounting



Note: Due to the accumulation of precipitation of slurry or particles of liquid, mounting the flow meter on the vertical pipe section in which liquid flows up is recommanded.

Applicable medium

Liquid with conductivity > 5μs/cm

Applications

●Conductive liquid with conductivity ≥ 5μs/cm(the conductivity of raw water is 100…5005μs/cm).
●Acidic, alkali and neutral salts solutions.
●Mud, slurry, paper pulp etc.
●It is used widely in petrochemical, power plant, metallurgy, textile, food, pharmaceutical, paper industry, environment protection as well as water conservancy.

Limit

●Not applicable to following medium: Gas, Steam and Liquid containing massive amount of gas.
●Not applicable to liquid with lower conductivity.
●Not applicable to petroleum products or organic solvents.
●Not good for high temperature medium due to the limit of the insulation lining material.
●Measuring is not immune to electromagnetic interference.

Specifications

Applicable medium:	Liquid with conductivity > 5μs/cm
Measuring range:	0.25 - 10m/s
Nominal diameter:	DN25…DN1800
Accuracy:	0.25%, 0.5%
Repeatability:	±0.15% of reading
Operating voltage:	220VAC±10%; 24VDC±10% Lithium-ion battery
Output signal:	Current: 4…20mA
	Pulse: frequency 0-1KHZ
Operating pressure:	DN10—DN65: ≤2.5Mpa
	DN80—DN150: ≤1.6Mpa
	DN200—DN1200: ≤1.0Mpa
	DN1200—DN1800: ≤0.6Mpa
Electrode material:	316 stanless stee, Hastelloy Hb, Hastelloy Hc,Titanium, Tantalum, Platinum
Lining material:	CR (Neoprene), F4(Teflon), PUR(Polyurethane), F46(FEP)
Body, flange material:	Carbon Steel, stainless steel
Excitation method:	Low frequency rectangle wave, High frequency excitation.
Excitation current:	160mA
Medium Temperature:	-20 ~90 ~130 ~180 (Refer to lining material)
Ambient Tmeperature:	Sensor: -40 ~80 ; Converter: -15 ~60 .
Ambient Humidity:	≤85%RH (20)
Power consumption	less than 20W
Structure	Integral, Wafer
Electrical connection:	M20×1.5
Grounding:	Grounding ring, grouding electrode, gronding pipe
Exproof:	Exd ib II BT 4
Process connection	Flange
Protection class:	IP65; IP67 (Optional)

Technical data

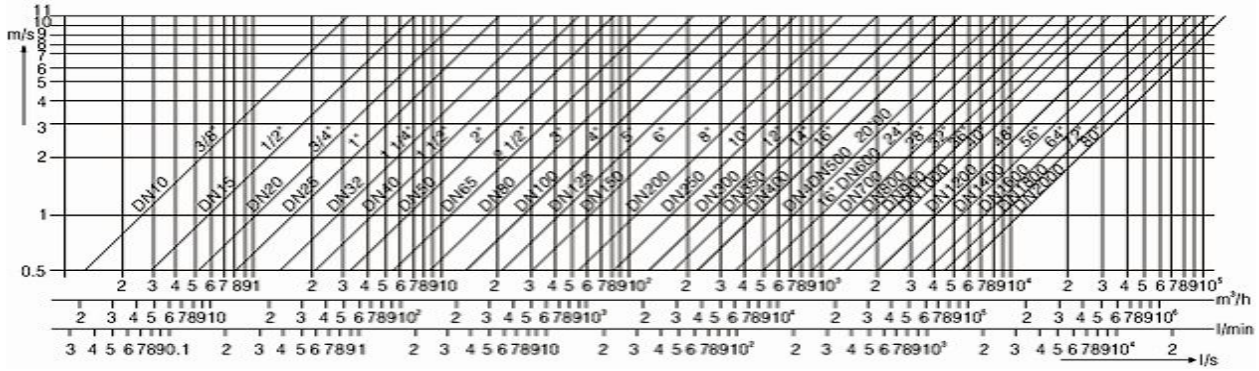
●Applicable medium: Liquid with conductivity > 5μs/cm, typically, the conductivity of distilled water is 5μs/cm, the conductivity of water is 100μs/cm, see below for conductivity of other medium:

Liquid	Conductivity(s/cm)	Liquid	Conductivity(s/cm)
Hydrochloric acid(40%)	$51.52X10^{-2}$	Potassium Chloride (AS)(21%)	$28.10X10^{-2}$
Nitrate(62%)	$49.04X10^{-2}$	Potassium Iodide (AS)(55%)	$42.26X10^{-3}$
Phosphate(70%)	$14.73X10^{-2}$	Potassium nitrate(22%)	$16.25X10^{-2}$
Sulfuric acid(85%)	$98.50X10^{-3}$	Potassium hydroxide(42%)	$42.12X10^{-2}$
Ethanol,Alcohol(95%)	$2.6X10^{-7}$	Potassium sulfate(5%)	$45.80X10^{-3}$
Acetic acid(70%)	$2.35X10^{-4}$	Sodium carbonate (15%)	$83.60X10^{-3}$
Propionic Acid (70%)	$8.5X10^{-7}$	Sodium Chloride (AS)(26%)	$21.51X10^{-2}$
Butyric acid(70%)	$5.6X10^{-7}$	Sodium nitrate(30%)	$16.06X10^{-2}$
Methanoic acid,formic acid(40%)	$98.4X10^{-4}$	Sodium Hydroxide(50%)	$82.00X10^{-3}$
Hydrofluoric acid(30%)	$34.11X10^{-2}$	Sodium sulfate(15%)	$88.60X10^{-3}$
Hydrogen iodide(5%)	$13.32X10^{-2}$	Ammonium Hydroxide(30%)	$1.93X10^{-4}$
Copper(II) chloride dihydrate(35%)	$69.9X10^{-3}$	Ammonium Chloride(25%)	$40.25X10^{-2}$
Copper(II) nitrate Gerhardite(35%)	$10.62X10^{-2}$	Ammonium nitrate(50%)	$36.33X10^{-2}$
Copper sulfate (17.5%)	$45.80X10^{-3}$	Ammonium sulfate (31%)	$23.21X10^{-2}$

Measuring range: 0.25—10m/s

Typically, it is ideal to have the flow velocity between 1m/s and 4/m. For those medium containing parcels, the flow velocity should not be more than 3m/s (considering the friction of lining and electrode). For viscous fluid, the flow velocity could be more than 2m/s, higher flow velocity helps eliminate viscous materials attached on electrode and improve the measuring accuracy.

Diagram of flow velocity, flow rate and nominal diameter relations:



Given measuring range (Q), the nominal diameter(D) could be determined by flow velocity(v) using following formula:

1. v = 1273. 24 * Q / DN2
   unit - v: [m /s], Q: [l/s], DN: [mm]
2. v = 353.68 * Q / DN2
   unit - v: [m /s], Q: [m 3/h], DN: [mm]
3. Volume flow rate is proportional to flow velocity, so the nominal diameter can be determined from given flow rate and flow velocity:

$$q_v = \pi r^2 \times V \times 3600 \times 10^{-6} = \frac{\pi D^2 \times V \times 3600 \times 10^{-6}}{4}$$

$$D = \sqrt{\frac{q_v \times 4 \times 10^6}{3600 \pi V}}$$

q_v: Volume flow rate (m3/h)

D: Flow meter nominal diameter (mm)

V: Flow velocity (m/s)

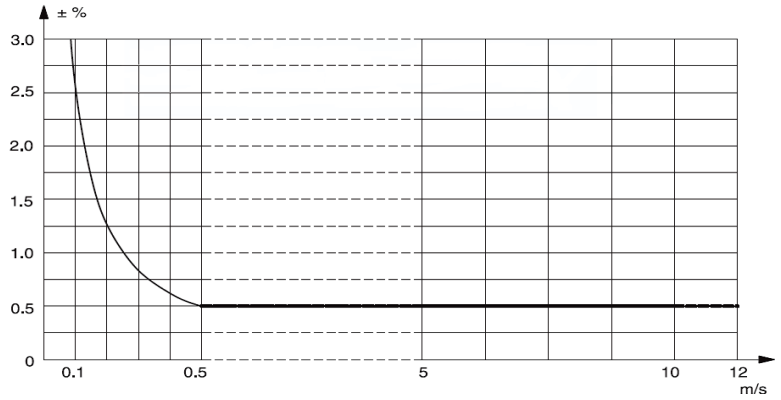
● Accuracy: ≤±0.25%, ≤±0.5% under reference conditions

Reference conditions for accuracy calibration

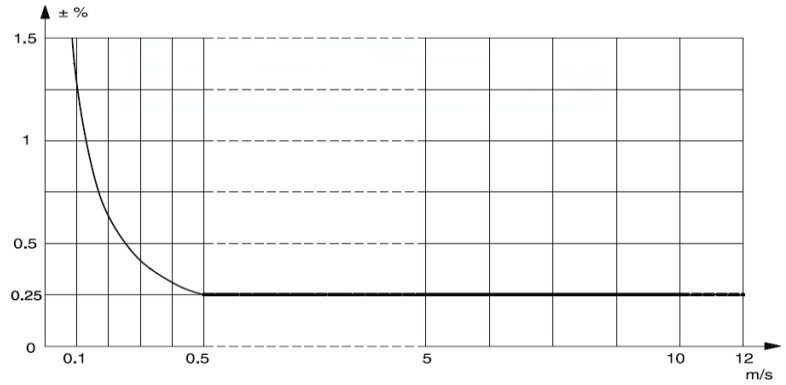
Item	Condition
Medium temperature	20 °C ± 3 °C
Ambient temperature	21 °C ± 3 °C
Pressure	1 bar
Power supply	24±1%

Stable duration	25 Mins
Straight pipe section(In)	10 x DN (DN ≤ 1200/48”)
	5 x DN (DN > 1200/48“)
Straight pipe section(Out)	5 x DN (DN ≤ 1200/48”)
	3 x DN (DN > 1200/48“)
Fluid state	Uniform

Accuracy curve(±0.5%)



Accuracy curve（±0.25%）



Features

Optional surge absorber	Protect the interface and converter, good for harsh applications.
Auto "zero" calibration	See manual for details
Self-monitoring and diagnostic functions	Catch errors of citation circuit, electrode circuit as well as convert and alert
Empty and full pipe detection	Detect empty or full pipe by capacitance technology
Instantaneous/total flow rate, dualdirection flow	Measuring both forward and reverse flow
Adjust flow direction on-line function	See manual for details
Multiple flow rate unit available	m3/h, l/h, kg/h, t/h, m3/m. l/m.
Damping time set	From 0.5 to 199.5S
Small signal removal	Adjustable in 0-10%, no pulse output for any signal less than settings.
Small flow rate removal	Adjustable in 0-10%, output flow rate is 0 for any flow rate less than settings
Multiple outputs selectable	4~20mA, 0 ~5KHz, pulse.
Display	Display instantaneous flow rate in percentage, instantaneous flow rate and total flow rate at same time.
Totalizer reset	See manual for details
Totalizer pre-set	See manual for details
Multiple excitation frequency selectable	6.25 Hz, 12.5 Hz, 25Hz
Power supply selectable	DC: 18V~36V or AC: 85V~265V

How to choose an electromagnetic flow meter

1. Understand follows before ordering

Medium name, components, viscosity	To determine If a electromagnetic flow meter is good for the medium
Medium Max. / Min. temperature, corrosiveness, abrasive ability. If negative pressure exists	To determine If a electromagnetic flow meter is good for the medium. What kind of lining and electrode material is appropriate.
Pipe inner/outer diameter(mm), typical flow rate, Min./Max. flow rate.	Select the right flow meter nominal diameter
Highest / lowest operating pressure	To determine pressure rating of the flow meter
Mounting requirement	Integral type or remote type
Installation environment	Determine the protection class

Note:

●The operating pressure must be less than the rated pressure of the flow meter;
●Min./Max. temperature in your application must be in the range of the flow meter's operating temperature. (see lining material for details);
●Select a appropriate nominal diameter for cost considering(See measuring range for details).
●Select accuracy level based on your measuring purpose and functionalities.
●Select electrode material based on medium corrosiveness;
●Select lining material based on corrosiveness, abrasive ability and temperature of the medium;
●Select integral type or remote type based on the mounting requirement.

2. How to determine the nominal diameter

Nominal diameter (mm)	Measurable range(m^3/h)	Useful measuring range(m^3/h)	Nominal diameter (mm)	Measurable range(m^3/h)	Valid measuring range(m^3/h)
10	0.0142～3.3912	0.0848～2.826	300	12.717～3052	76.302～2543
15	0.0318～7.6302	0.1908～6.3585	350	17.31～4154	103.86～3461
20	0.0566～13.5648	0.3392～11.304	400	22.61～5425	135.65～4521
25	0.0883～21.195	0.5298～17.6625	450	28.62～6867	171.68～5722
32	0.1447～34.7258	0.8682～29.9382	500	35.33～8478	211.95～7065
40	0.2261～54.2592	1.3565～45.216	600	50.87～12208	305.2～10173
50	0.3533～84.78	2.1195～70.65	700	69.24～16616	415.4～13847
65	0.5970～143.28	3.5819～119.39	800	90.44～21703	542.6～18086
80	0.9044～217.03	5.4259～180.86	900	114.46～27468	686.7～22890
100	1.413～339.12	8.478～282.6	1000	141.3～33912	847.8～28260
125	2.2079～529.87	13.2468～441.56	1200	203.5～48833	1221～40694
150	3.1793～763	19.0755～635.85	1400	277～66467	1662～55389
200	5.652～1356	33.912～1130.4	1600	361.8～86814	2171～72345
250	8.8313～2119	52.9875～1766	1800	457.9～109874	2747～91562

Enlarging or reducing pipe is necessory if the flow meter inner diameter is different with the existed pipe inner diameter.

3. Nominal diameter choose considerations

(1) For lower viscous liquid (like water), normally, it is recommanded to have the full pipe flow velocity in 1.0~10m/s. Please note the measuring accuracy will be affected if flow velocity is less than 0.5m/s.

(2) For liquid with higher viscosity or containing parcels, have the flow velocity no less than 2m/s, it is better to have it in 3~4m/s for self-cleaning and precipitate preventing purpose.

(3) For abrasive medium like slurry, have the flow velocity less than 2m/s(Max. flow velocity should be less than 3m/s) to minimize the abrasion to lining and electrode.

(4) For medium with low conductivity, try to have the flow velocity lower (slightly less than 0.5m/s, no more than 1m/s), since higher flow velocity makes more flowing noise, which will cause output fluctuation.

4. How to determine electrode material

Material	Applicable medium
316L	Applicable to: Weak corrosive medium like industrial water, water, sewage as well as acidic, alkali, and neutral salts solutions.
Hastelloy B	Not applicable to: hydrochloric acid in all concentrations below the boiling point, also proof against the corrosion of unoxidizing acid, alkali, unoxidation salt liquid such as sulphuric acid, phosphoric acid, hydrofluoric acid, organic acid etc.
	Not applicable to: Nitric acid
Hastelloy C	Applicable to: oxidizing acid, e.g. nitric acid, mixed acid, or the mixed medium of the chromic acid and the sulphuric acid, also proof against the corrosion of oxidizing salts e.g. Fe+++ 、Cu++ or containing other oxidizing agent, e.g. hypochlorite solution over normal temperature, sea water. Not applicable to: Hydrochloric acid
	Not applicable to: Hydrochloric acid
Titanium(Ti)	Applicable to: sea water, various kinds of chlorides and hypochlorite, oxidizing acid, (Including fuming nitric acid), organic acid, alkali, etc.
	Not applica ble to: reducitc acid like Hydrofluoric, Sulfuric acid, Phosphate and Hydrochloric acid
Tantalum(Ta)	Applicable to: All chemical except Hydrofluoric, alkali solution and Oleum.
	Not applicable to: Alkali solutions, Hydrofluoric acid.
Platinum(Pt)	Applicable to: Almost all chemical medium.
	Not applicable to: aqua regia, Ammonium salt
Stainless steel coated with Wolfram Carbide	Applicable to: Sewage, paper slurry
	Not applicable to: Mineral acid, Organic Acids and Chloride.

5. How to determine lining material

Lining material	Symbol	Properties	Max. operating temperature	Applicable medium	Nominal diameter
Neoprene	CR	Average abrasiveness, good for acidic, alkali, and salts solutions.	< 60 ℃	Water, sea water, industrial water	≥DN50
Polyurethane	PUR	With very good antiabrasiveness; No good for acid, alkali solutions	< 60 ℃	Slurry like mine slurry, paper slurry	DN25-DN500
Teflon	F4 / PTFE	Stable chemical property, proof against the corrosion of boiling hydrochloric acid, sulphuric acid, nitric acid and aqua regia, concentrated alkali	< 160 ℃	Strong corrosive acid, alkali solution	≥DN10
FEP(F46)	FEP(F46)	Same chemical properties as F4, but with better tensile strength and pressure resistance.	< 120 ℃	Corrosive acidic, alkali, and salts solutions	DN10～200
PFA	PFA	Same chemical properties as F46, but with better tensile strength and pressure resistance.	< 180 ℃	Corrosive acidic, alkali, and salts solutions	DN10～300

6. How to determine electromagnetic flow meter type

Remote type: the most widely used one. The sensor is pipe mounted. Connected by cable, the converter could be mounted hundreds meters away from sensor. Advantage: the converter could stay away from harsh on-site and is easy to read.

Integral type: the sensor and converter are integrated together. Since the connecting cable is inside of the meter, there is less interferences. Typically it is used for flow meters with smaller nominal diameter. It is no good for applications with high temperature, strong vibration or the unit needs be mounted where it is not easy to read.

7. How to determine grounding ring

(1) For electromagnetic flow meter, typically, grounding is done by pipe grounding or flange grounding, but If the pipe is insulated to the

medium, a grounding ring or a grounding electrode equipped sensor is needed.

(2) 2 types of grounding ring available: Regular type and protection type, the former is good for most applications, the latter is for abrasive medium.

(3) The material of grounding ring should be compatible to medium as to the corrosiveness.

8. How to determine protection class

IP65	Totally protected against dust; Protected against low pressure jets of water from all directions – limited ingress permitted.
IP67	Totally protected against dust; Protected against the effect of immersion between 15cm and 1m
IP68	Totally protected against dust, Protected against long periods of immersion under pressure

Note: The protection class of the sensor can be up to IP68, and up to IP67 for the converter, which implies the protection class o f integral type flow meter can be up to IP67.

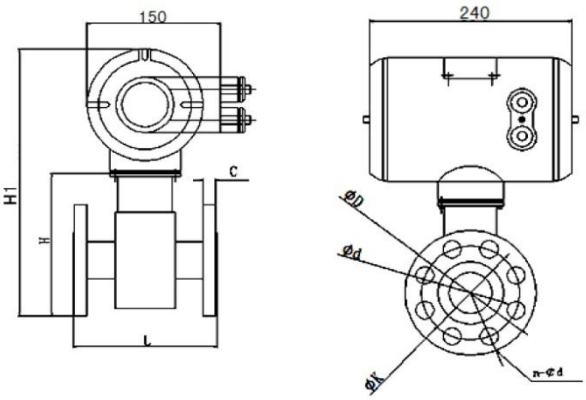
9. How to determine a electromagnetic flow meter for food, medicine applications

Lining material: PTFE;

Housing and flange material: stainless steel;

Easy to disassembling and cleaning;

Dimension in mm (Integral)

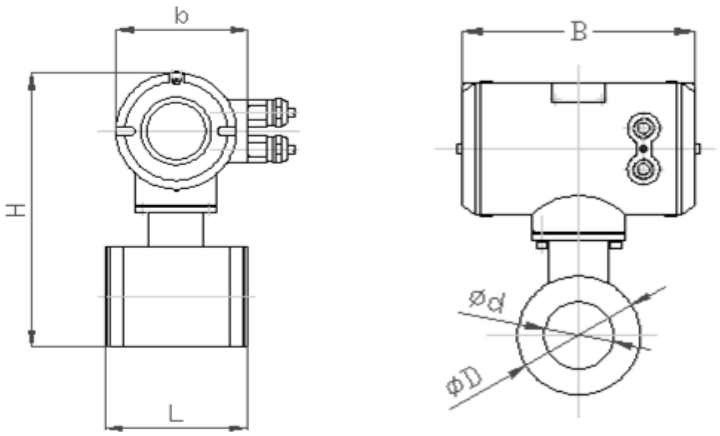


Flange mounting

DN	L (mm)	H	H1	D	K	n-Ød	C	Pressure	Weight(kg)
10	160	130	247	95	65	4-Ø14	14	PN4.0	6.6
15		135	252	95	65	4-Ø14	14		6.5
20		143	260	105	75	4-Ø14	16		6.4
25	160	123	240	115	85	4-Ø14	16		6.2
32	165	150	267	140	100	4-Ø18	18		7.2
40	195	160	277	150	110	4-Ø18	18		8.3
50	200	173	290	165	125	4-Ø18	20		10
65	195	183	300	185	145	4-Ø18	20	PN1.6	10.5
80	200	206	323	200	160	8-Ø18	20		11.4
100	245	225	342	235	180	8-Ø18	22		14.5
125	250	255	372	250	210	8-Ø18	22		17.5
150	300	287	405	285	240	8-Ø22	24		23
200	350	344	461	340	295	12-Ø22	26		32
250	400	396	512	395	350	12-Ø22	26	PN1.0	44
300	500	450	565	445	400	12-Ø22	28		56
350		510	625	500	460	16-Ø22	30		71
400	600	560	675	565	515	16-Ø26	32		94
450		610	725	615	565	20-Ø26	35		106
500		660	775	670	620	20-Ø26	38		129
600		770	885	780	725	20-Ø30	42		203

700	700	910	1025	895	840	24-¢30	30		320
800	800	1020	1135	1010	950	24-¢34	32		450
900	900	1120	1235	1110	1050	28-¢34	34		580
1000	1000	1220	1335	1220	1160	28-¢36	34		700
1200	1200	1410	1525	1400	1340	32-¢33	60	PN0.6	900
1400	1400	1620	1735	1620	1560	36-¢36	68		1150
1600	1600	1850	1965	1880	1760	40-¢36	76		1450
1800	1800	2040	2155	2045	1970	44-¢39	84		1780

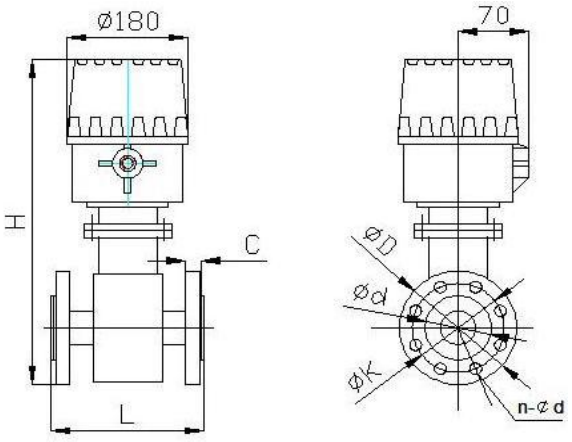
Dimension in mm (Wafer)



Wafer mounting

DN(mm)	Pressure(Mpa)	L	H	B	b	D	d	Weight(kg)
10	4	100	285	152	102	90	10	3.0
15			290			95	15	3.0
20			298			100	20	4.0
25			289			72	25	5.0
32			305			79	32	6.0
40			315			89	40	8.0
50		120	329			100	50	8.0
65	1.6	130	348			118	65	10.0
80			361			132	80	11.0
100		150	379			148	100	15.0
125		200	407			180	125	20.0
150		200	438			220	150	26.0
200		250	495			263	200	33.0
250	1	300	546			312	250	39.0
300		340	600			368	300	45.0

Dimensions in mm (battery powered)



Battery powered

DN	L (mm)	H	D	K	n-Ød	C	Pressure	Weight(kg)
10	160	310	95	65	4-Ø14	14	PN4.0	6.6
15		315	95	65	4-Ø14	14		6.5
20		323	105	75	4-Ø14	16		6.4
25	160	303	115	85	4-Ø14	16		6.2
32	165	330	140	100	4-Ø18	18		7.2
40	195	340	150	110	4-Ø18	18		8.3
50	200	353	165	125	4-Ø18	20		10
65	195	363	185	145	4-Ø18	20	PN1.6	10.5
80	200	386	200	160	4-Ø18	20		11.4
100	245	405	235	180	4-Ø18	22		14.5
125	250	435	250	210	4-Ø18	22		17.5
150	300	467	285	240	8-Ø22	24		23
200	350	524	340	295	12-Ø22	26		32
250	400	576	395	350	12-Ø22	26	PN1.0	44
300	500	630	445	400	12-Ø22	28		56
350		690	500	460	12-Ø22	30		71
400	600	740	565	515	16-Ø26	32		94
450		890	615	565	20-Ø26	35		106
500		840	670	620	20-Ø26	38		129
600		950	780	725	20-Ø30	42		203
700	700	1090	895	840	24-Ø30	30		320
800	800	1200	1010	950	24-Ø34	32		450
900	900	1300	1110	1050	28-Ø34	34		580
1000	1000	1400	1220	1160	28-Ø36	34		700

Installation

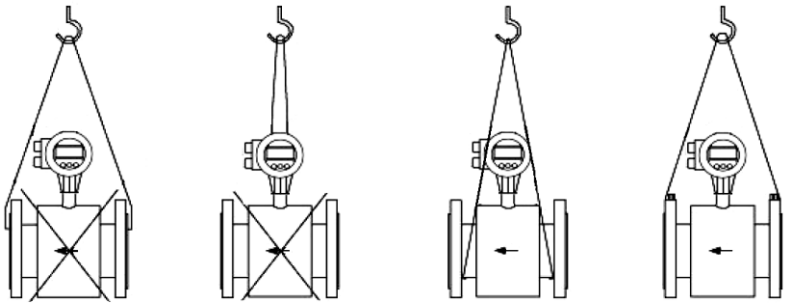
1. Install location

Considering follows for mounting location:

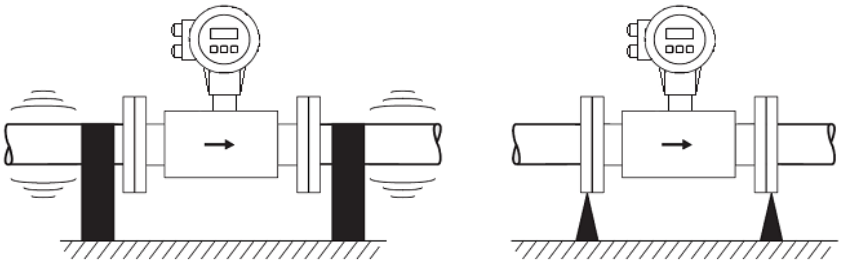
- Stay away from objects or devices with strong electromagnetic fields, e.g. powerful motors, transformers etc..
- Try to install the flow meter where is dry and ventilated.
- Ambient temperature less than 60 ℃ and relative humidity less than 95%.
- Has enough space for maintainence and repair.
- Do not mount on suction side of a pump; Valve should be mounted downstream to flow meter.

2. Shipping and mounting considerations

1). Do not unpack the packaging while shipping. Be careful to lining protection.



2). Mounting bracket is needed for vibrating pipe.



3). The actual flow direction must match the labeled flow direction on the flow meter.

4). Keep the flanges parallel to avoid leaking.

5). Have the electrode horizontal to avoid any measuring error.

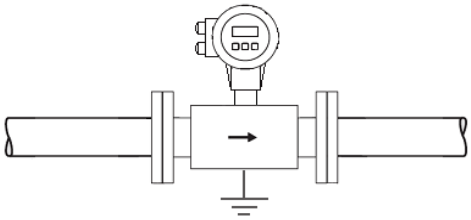
6). The sensor's pipe section must be absolutely full.

7). Mounting location does not cause bubbles or negative pressure.

8). Be careful to the connections of pipe, sealing gaskets and sensor to avoid unwanted vortex.

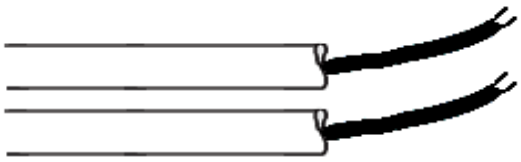
9). The conductive medium in measuring pipe section should be uniform.

10). The sensor must be grounded separately. Grounding resistance typically is less than 100 ohm, for exproof product, it should be less than 10 ohm.



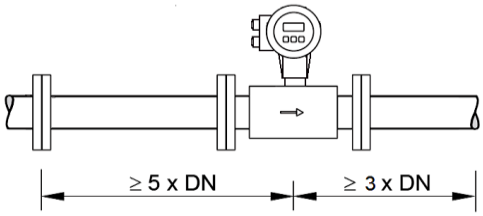
11). Mount the flow meter on the vertical pipe section in which medium flows up.

12). For remote type, signal cable must be put in a matel protection tube which is separated from power cable to avoid any signal interference

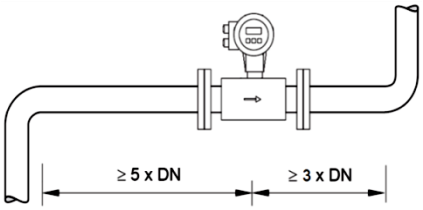


3. Piping requirements

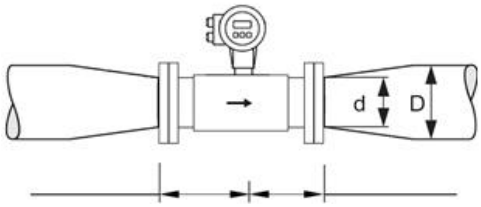
1). Straight pipe is no less than 5D upstream and 3D downstream.



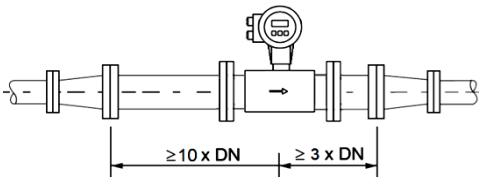
2). For right angle pipes, a minimum of 5D straight pipe upstream or 3D downstream is recommended.



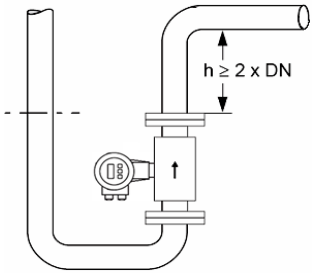
3). No straight pipe is needed for reduced pipe.



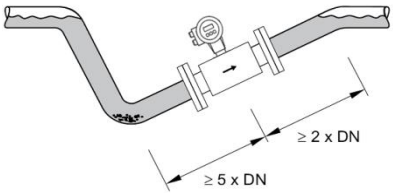
4). For expanded pipe, straight pipe straight pipe is needed.should be no less than 10D upstream and no less than 3D downstream.



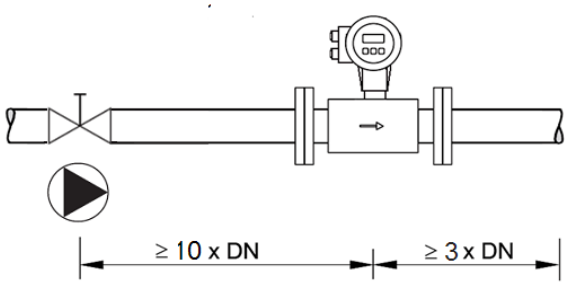
5, For vertical mounting, downstream to the right angle, a no less than 2D straight pipe is recommended.



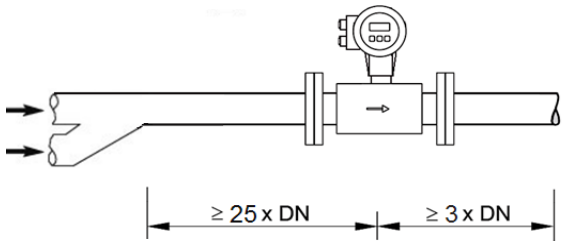
6). For tilted pipe, make sure the pipe is absolutely full. Refer to below.



7). If a pump / valve is upstream to the flow meter, No less than 10D straight pipe is needed upstream and 3D downstream.

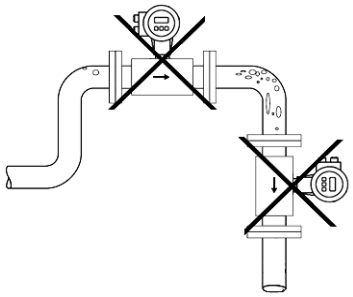


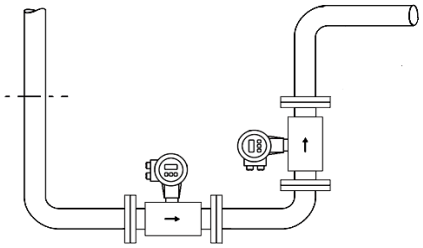
8). For mixed medium, No less than 10D straight pipe is recommended upstream and 3D downstream.



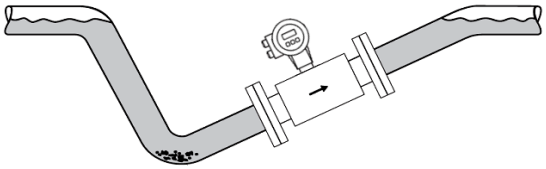
4. Mounting direction requirements

1). For horizontal pipe, mount on the lower section of horizontal pipe; For vertical pipe, mount on where medium flows up.

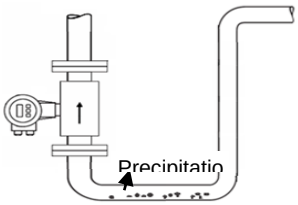




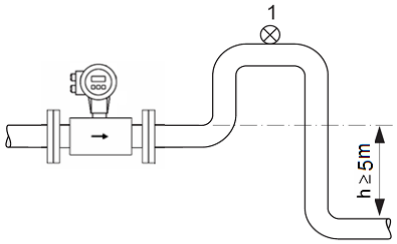
2). For measuring accuracy, mount on the pipe section where medium flows up.



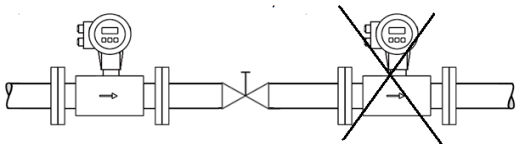
3). For medium containing parcels or precipitations, mount on the vertical pipe section where medium flows up.



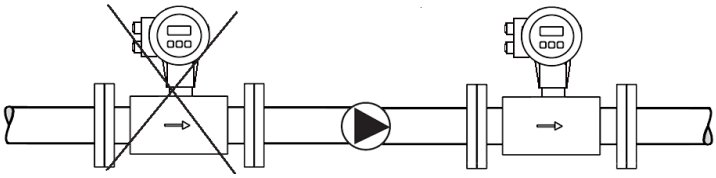
4). An exhaust valve is recommended to avoid negative pressure if pipe elevation difference is more than 5m.



5). Install valve downstream to flow meter to avoid negative pressure and improve measuring accuracy.

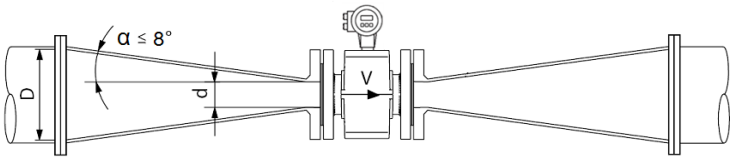


6). Do not mount flow meter at the suction side of a pump.



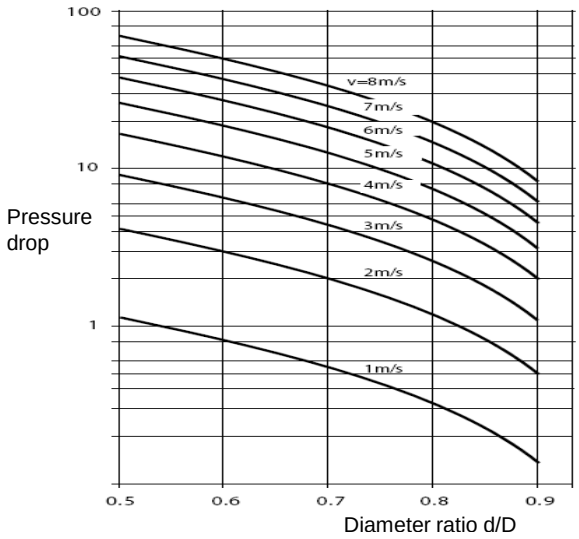
5. Large diameter pipe mounting

1). Large diameter pipe mounting can be done by reducing pipe.



D = Pipe inner diameter
d = Flow meter nominal diameter
v = Flow velocity(m/s)

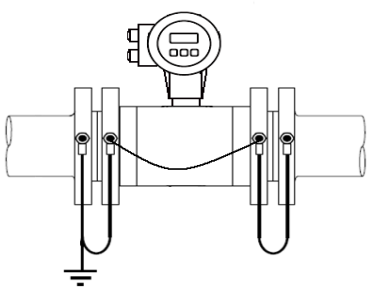
2). Refer to below diagram(α = 8°) for pressure drop due to pipe reducing.



P = Pressure drop
α = Reducer pipe pitch angle

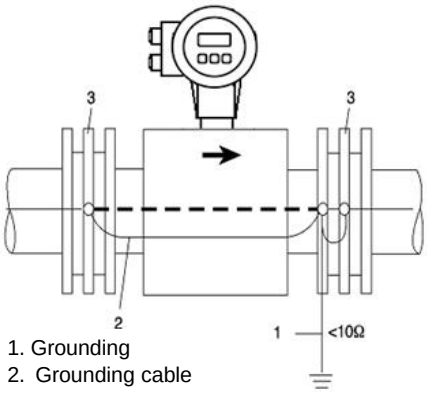
6. Grounding

1). For stable performance, less interferences and measuring accuracy, a separated grounding is necessory for the sensor. Following diagram for mounting on metal pipe without insulating(grounding resistance < 10 ohm).



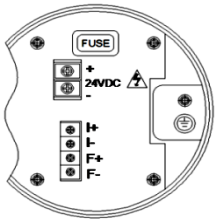
Ground

2). Mounting on plastic pipe or other pipe with insulated coating, grounding rings are needed for both side of the sensor.

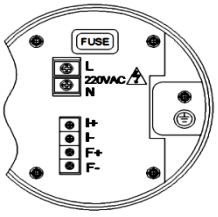


1. Grounding
2. Grounding cable
3. Grounding ring

Wiring (Integral type)



Power Supply 24VDC



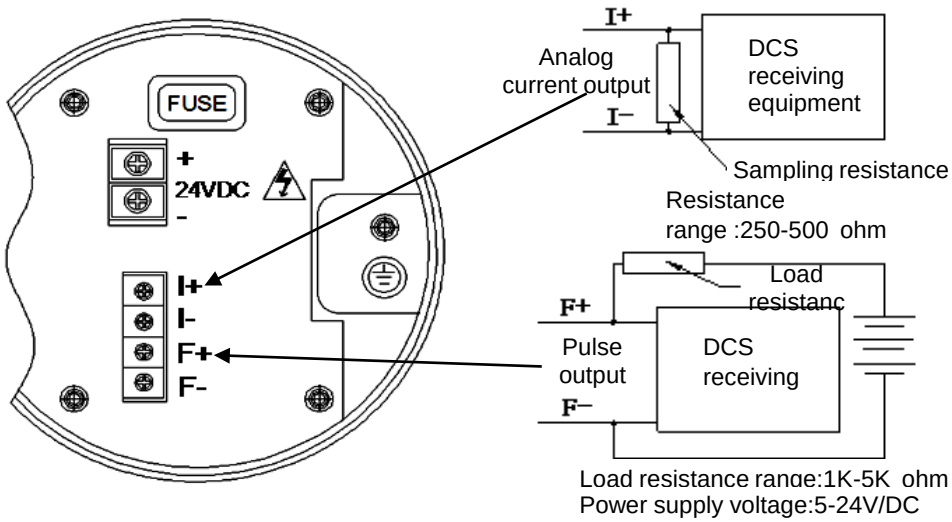
Power Supply 220VAC

Warning:
1. Please be careful to differentiate 220VAC and 24VDC.
2. Connecting power supply wires to signal input terminals will cause permanent damage.

Connection terminals (Integral type)

	Symbol	Description	Comments
L	L	AC 85~265v power supply	Ac220v power supply
N	N	AC 85~265v power supply	Ac220v power supply
+	+	DC 18~36v power supply +	24v+ Power supply
_	_	DC 18~36v power supply -	24v- Power supply
1	I+	4~20mA output+	Load resistance ≤500Ω
2	I-	4~20mA output-	
3	F+	Pulse output +	Passive pulse output , Load current≤20mA
4	F-	Pulse output -	

Wiring diagram for connecting to control system (Integral type)



1. Connecting for analog current output: 4~20mA DC signal output, Max. load resistance 500 ohm.

2. Connecting for passive pulse output: Transistor output, Pulse frequency 0~5kHz, load current 20mA.

Order code

FMI100-	025	A	N	B	K	F	C	0	A	5	T	P	Description
FMI100-													FMI100 - integral
FMI100B-													FMI100A - wafer
	025												DN25…DN1800
		N											No output
		A											4…20mA output
		P											Pulse output
			N										No display
			C										LCD display
				A									Accuracy: 0.25%
				B									Accuracy: 0.5%
					K								Electrode material: 316L stainless steel
					B								Electrode material: Hastelloy(Hb)
					C								Electrode material: Hastelloy(Hc)
					T								Electrode material: Titanium
					D								Electrode material: Tantalum
					P								Electrode material: Platinum
					S								Customization
						C							Lining material: CR (Neoprene)
						F							Lining material: F4(Teflon)
						P							Lining material: PUR(Polyurethane)
						Q							Lining material: F46(FEP)
						S							Customization
							C						Body: carbon steel
							S						Body: stainless steel
								0					No communication
								1					RS485(Modbus
								2					RS232(Modbus
								3					HART protocol
									A				No grounding ring
									B				Grounding ring
									C				Grounding electrode
										5			Protect class: IP65
										7			Protect class: IP67
											T		Power supply: AC 85~265v
											D		Power supply: DC 18~36v
											L		Power supply: Lithium-ion battery
												P	Standard
												E	Ex-proof