

Datasheet

Electromagnetic flow meter

SUP-LDG-C

**Supmea**<sup>®</sup>

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## Datasheet

Supmea's electromagnetic flow meter does not contain any moving parts, rotating gears or turbines, or bearings. Instead, it relies on two electrodes to measure the density of the induced magnetic field that results from an electrically conductive fluid, such as water, flowing through a pipe. So there is no susceptibility to bearing wear or other mechanical wear-and-tear issues.

As for the electrodes and the liner used in electromagnetic flow meter, these components can be fabricated from a variety of materials to make the mag meter compatible with virtually various electrically conductive fluid, including aggressive acids.

The only limitation of the electromagnetic flow meter is that the measured fluid media must be electrically conductive ( $> 5\mu\text{S/cm}$ ). Non-conductive fluids, such as oil and other petroleum-based fluids, cannot be measured with mag meter technology.

## Application

- Sewage treatment
- Printing and dyeing
- Paper making
- Chemical industry
- Electricity,
- Pharmaceutical,
- Metallurgy

## Benefits

- Accuracy: 0.3%, 0.5%
- Infrared touch button
- RS485, 4-20mA output, frequency output
- Double-layer silicon steel structure
- Standard connection ground screw
- Working be buried below 5m
- Low conductivity measurement
- Semi-external fuse, easy to replace
- Special design for the ground electrode location



**Electromagnetic flow meter**

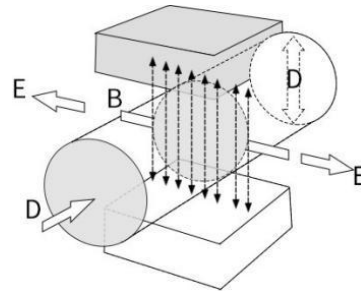
Principle

The measurement principle of magnetic flowmeters can be described as follows: when the liquid goes through the pipe at the flow rate of  $v$  with a diameter  $D$ , within which a magnetic flux density of  $B$  is created by an exciting coil, the following electromotive  $E$  is generated in proportion to flow speed  $v$ :

$$E=K \times B \times V \times D$$

Where:

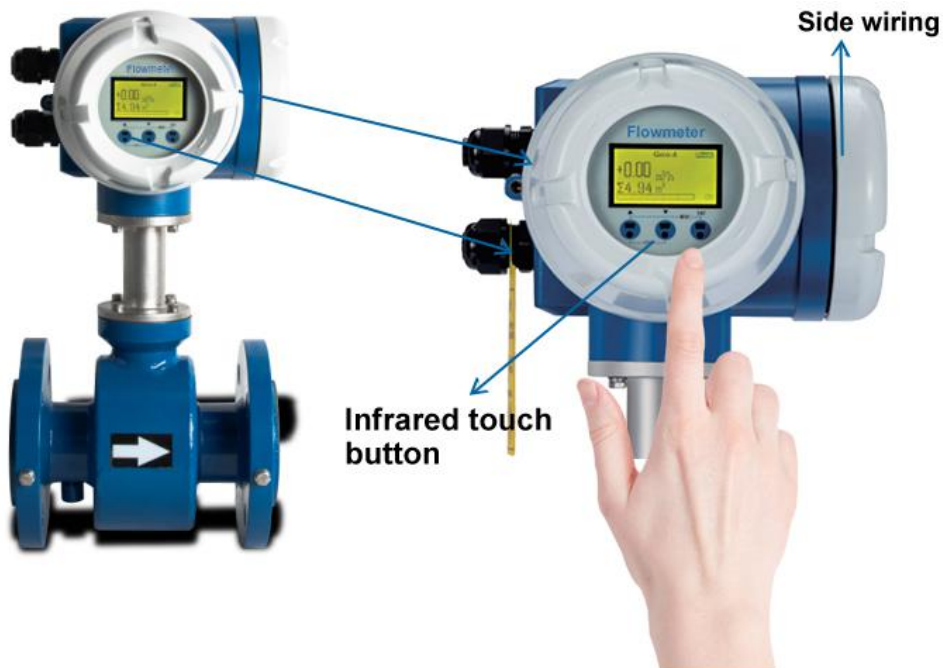
- E— Induced electromotive force
- K— Meter constant
- B— Magnetic induction density
- V— Average flow speed in cross-section of measuring tube
- D— Inner diameter of measuring tube



The induced voltage signal is detected by two electrodes and transmitted to the converter via a cable. After a series of analog and digital signal processing, the accumulated flow and real-time flow are displayed on the display of the converter.

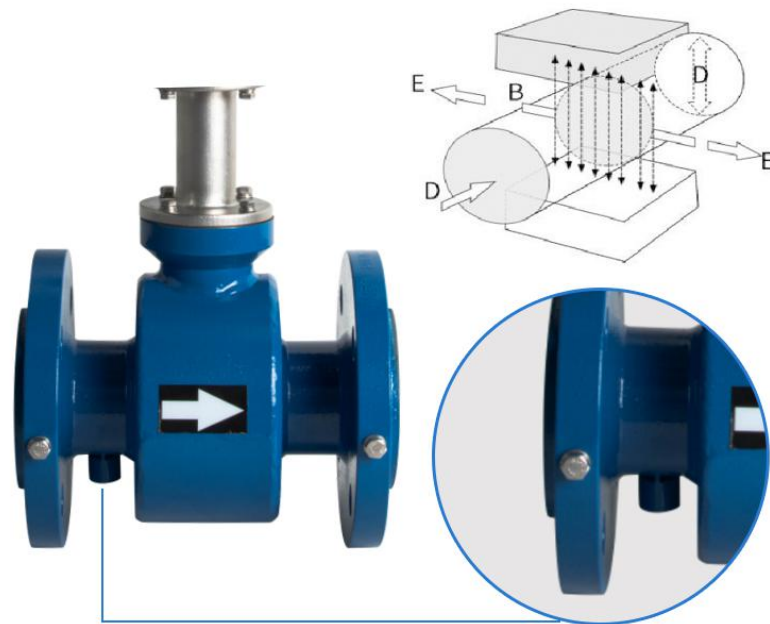
Features

■ Easy operation



The infrared touch button, no need to open the cover for operation. Side wiring is convenient for various complex field wiring requirements.

■ Accuracy guarantee



The position of grounding electrode is specially designed to ensure the stability of magnetic field without interference and accurate measurement

■ Complex work environments

Slurry measurement



Low conductivity medium measurement



## Parameter

### Converter

Excitation frequency	1.5625Hz、3.125Hz、6.25 Hz、12.5 Hz、25Hz
Excitation current	125mA、200mA
Load Resistance	$\leq 750 \Omega$ (ON), $\geq 100 K \Omega$ (OFF)
Current output	4~20mA (load resistance: 0~750 $\Omega$ , including cable resistance)
Pulse frequency output	30V, pulse output rate 0.0001~10000 pps
Communication	RS485 、 Hart
Display	Dot matrix LCD screen: 128×64, with backlight
Converter Ingress protection	IP65
Shell material	Aluminum alloy
Electrical Interface	M20×1.5 internal thread, $\phi 10$ cable hole
Ambient temperature	-20℃ ~ 70℃
Grounding requirements	Grounding resistance $\leq 10 \Omega$

### sensor

Nominal Diameter	DN8-DN2000
Electrode material	316L, HC, Hb, Ti, Ta, Pt, tungsten carbide, etc.
Lining material	PFA/F46, PTFE, neoprene
Ingress protection	IP65
Ambient temperature	-30~60℃
Body material	Carbon steel, 304 stainless steel
Medium working pressure	Not greater than the nominal pressure rating of the flange
Nominal pressure	0.25MPa
	0.6MPa
	1.0MPa
	1.6MPa
	2.5MPa
	4.0MPa
	Other nominal pressure

### Flange standard

DN8~DN50	GB/T9119 PN40
DN65~DN200	GB/T9119 PN16
DN250~DN600	GB/T9119 PN10
DN700~DN1200	JB/T81 PN6
DN1400~DN2000	JB/T81 PN2.5
DN2200~DN3000	GB/T9115 PN2.5

### Medium temperature

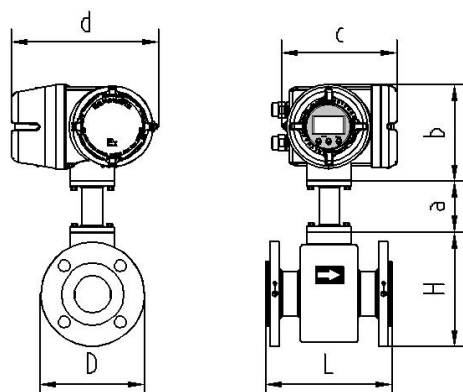
PTFE	-35℃~120℃
PFA/F46	-35℃~140℃
Neoprene	-5℃~65℃

Electrode selection	
Material	Corrosion Resistance
Molybdenum-containing stainless steel (0Cr18N12Mo2Ti)	Applicable: Domestic/industrial water, sewage, weak acid and alkali saline as well as concentrated nitric acid at room temperature. Not Applicable : Hydrofluoric acid, hydrochloric acid, chlorine, bromine, iodine and other media.
Hastelloy B	Applicable: Non-oxidizing acid, such as hydrochloric acid and hydrofluoric acid of certain concentration and other alkali liquor with a concentration < 70% sodium hydroxide Not Applicable: Nitric acid and other oxidizing acids
Hastelloy C	Applicable: corrosion by oxidizing acids such as Nitric acid, acid mixtures and sulfuric acid and environmental corrosion by oxidation resistant salt or that contains other oxidants. For example, Hypochlorite solution higher than room temperature is strongly corrosion resistant to sea water. Not Applicable: Reducing acid and chloride such as hydrochloric acid
Ti	Applicable: chloride, hypochlorite, sea water, oxidizing acid. Not applicable: reducing acid such as hydrochloric acid, sulphuric acid
Ta	Applicable: most acids like concentrated hydrochloric acid, nitric acid and sulfuric acid including hydrochloric acid and nitric acid at the boiling point as well as sulfuric acid under 175 °C. Not applicable: alkali, hydrofluoric acid and smoke sulfuric acid.
Pt	Various acids, bases and salts, excluding aqua regia.

Lining Selection				
Lining material	Symbol	Properties	Applicable medium	Nominal diameter
Neoprene	CR	Average abrasiveness, good for acidic, alkali, and salts solutions.	Water, sea water, industrial water	DN50-DN300
Polyurethane	PU	With very good antiabrasiveness; No good for acid, alkali solutions	Slurry like mine slurry, paper slurry	≥DN50
Polytetrafluoroethylene	F4/PTFE	Stable chemical property, proof against the corrosion of boiling hydrochloric acid, sulphuric acid, nitric acid and aqua regia, concentrated alkali	Strong corrosive acid, alkali solution	DN32-DN1000
FEP(F46)	FEP (F46)	Same chemical properties as F4, but with better tensile strength and pressure resistance.	Corrosive acidic, alkali, and salts solutions	DN8-DN300
PFA	PFA	Same chemical properties as F46, but with better tensile strength and pressure resistance.	Corrosive acidic, alkali, and salts solutions	

**Dimension**

a=80mm② b=152mm c=183mm① d=233mm total height=H+a+b



Diameter-DN (mm)	Pressure (MPa)	Dimension			Weight (kg)
		L (mm)	H (mm)	D (mm)	
8	4.0	150	108	90	5
10	4.0	150	108	90	5
15	4.0	200	114	95	8
20	4.0	200	126	105	9
25	4.0	200	141	115	9
32	4.0	200	154	140	10
40	4.0	200	166	150	11
50	4.0	200	179	165	12
65	1.6	200	196	185	16
80	1.6	200	210	200	18
100	1.6	250	230	220	22
125	1.6	250	264	250	25
150	1.6	300	301	285	31
200	1.6	300	346	340	41
250	1.0	300	405	395	65
300	1.0	350	452	445	66
350	1.0	350	508	505	83
400	1.0	450	563	565	112
450	1.0	450	613	615	120
500	1.0	500	671	670	163
600	1.0	600	792	780	255
700	0.6	600	888	895	249
800	0.6	700	1001	1015	340
900	0.6	800	1103	1115	450
1000	0.6	900	1199	1230	500
1200	0.6	1000	1420	1400	590
1400	0.25	1200	1555	1620	680
1600	0.25	1600	1763	1820	980
1800	0.25	1800	1963	2045	1000
2000	0.25	2000	2168	2265	1100





## Applications

### ■ Process flow monitoring and raw material control

The project has a large production volume and complex production process. According to different conditions, our electromagnetic flow meter was finally selected.



### ■ Sewage treatment

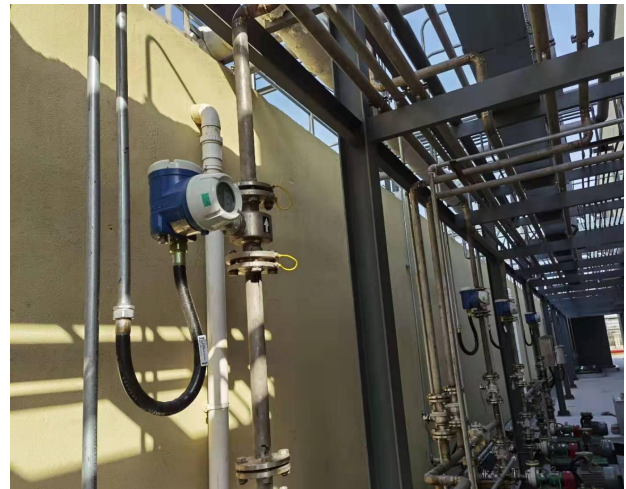
There are many impurities in the sewage, which requires accurate measurement and high stability. The sensor with IP68 immersion installation to ensure the accuracy and stability of the measurement.





■ Workshop production line

Process conditions such as acid, alkali, salt, and frozen brine in the production line of the workshop are measured. The electromagnetic flowmeter is selected, which has high accuracy and good stability.



■ Water supply

Although the conditions are bad and the straight pipe is insufficient, but the pipe is full of liquid. The electromagnetic flowmeter has small pressure loss, no moving parts, wide range, strong anti-interference ability, and stable use





Ordering code

LDG-C -M1-DN50-J5-O2-D2-I2-V1-P3-F1-E1-L2-G2-B1														Description	
LDG-C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Description
Type	M1														Compact type
Pipe size	DNXX														DN8 - DN1000
Accuracy	J5														0.5(standard)
	J4														0.3(Optional)
Output	O1														Pulse output
	O2														4-20mA output
Communication				D2											RS485(Standard)
Installation				I2											Flange installation
Power supply	V1														220VAC
	V2														24VDC
Pressure rating	P0														0.2MPa
	P1														0.6MPa
	P2														1.0MPa
	P3														1.6MPa
	P4														2.5MPa
	P5														4.0MPa
Flange standard	F1														JB(DN700-2000
	F2														GB(<DN600 )
	F3														HB
	F4														SH
	F5														ANSI
Electrode material	E1														316L stainless steel
	E2														Titanium
	E3														Tantalum
	E4														Hastelloy B
	E5														Hastelloy C
	E6														Platinum
	E7														Tungsten carbide
Lining material	L1														Neoprene (CR) DN50-DN300
	L2														Polyurethane (PU) ≥DN50
	L3														F4/PTFE DN32-DN1000
	L4														Teflon (F46/FEP) DN8-DN300
	L5														Tetrafluoroethylene (PFA) DN8-DN300
Grounding	G0														No grounding
	G1														Grounding ring
	G2														Grounding electrode
	G3														Grounding ring and electrode
Body material	B1														Carbon steel
	B2														304 stainless steel

