

# Electromagnetic flowmeter

Committed to process automation solutions

---

## Datasheet



**LDG-SUP**

SUP-LDG series of electromagnetic flowmeter was developed on long-cultivated technology for flow measure. LDG family has extended its application range with such model as integrated and remote. Through constant development and improvements, LDG series electromagnetic flow meter has become more accurate and reliable and widely used in the industrial instrumental field. We provides wide range of electromagnetic flow meters, all fulfilling the highest demands in terms of accuracy and reliability in industries such as water and waste water, food and beverage, mining, pulp and paper.

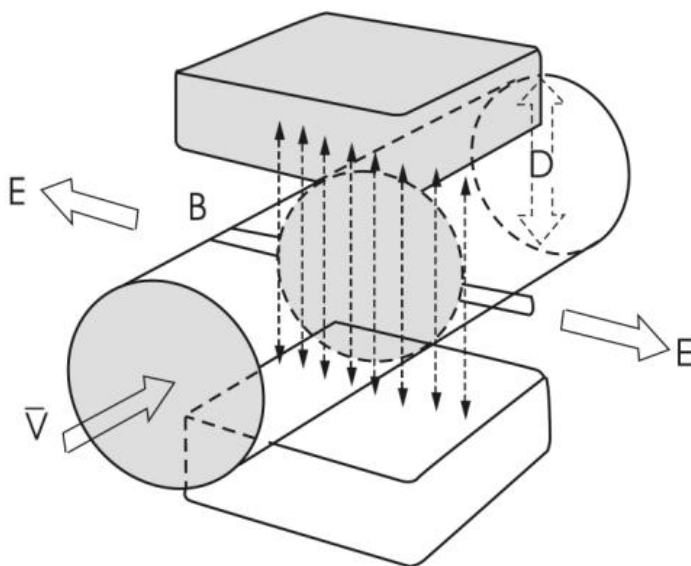
Please note: Electromagnetic flow meter is only applicable to measure the flow of conductive liquid. The fresh supply of equipment is in factory setting condition, and only when manufacturers set the appropriate parameters, can it work well.

## Features

- Excellent measurement repeatability and linearity
- Good reliability and anti-interference performance
- Good pressure resistance sealing ability
- High intelligentization
- Self diagnosis for empty pipe Detection
- Low pressure loss measurement tube
- Extremely simple operation
- High degree of accuracy

## Principle

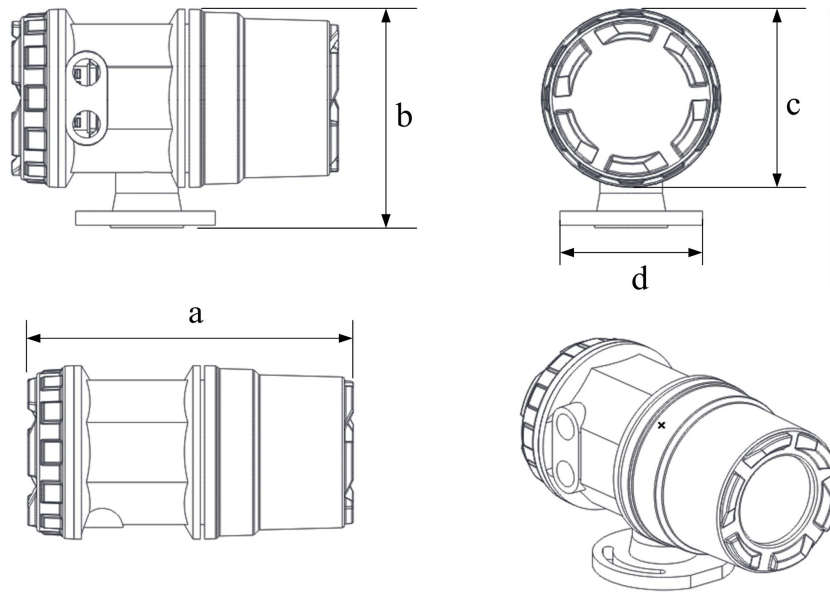
The measurement principle of magnetic flowmeters can be described as follows: when the liquid goes through the pipe at the flow rate of  $v$  with a diameter  $D$ , within which a magnetic flux density of  $B$  is created by an exciting coil, the following electromotive  $E$  is generated in proportion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



$$E=KBVD$$

- $E$ — Induced voltage;
- $K$ — Constant;
- $B$ — Magnetic induction (magnetic field);
- $V$ — Flow velocity;
- $D$ — Pipe Size

## Parameter



[mm]				[Kg]
a	b	c	d	
219	147	120	90	0.6

- Flow direction: Right Left
- Accuracy: 0.005
- Reliability: 0.002
- Nominal width range: DN 10 to 1200 (3/8 to 48")
- Housing material: Carbon steel
- Process connection: Flange
- Nominal pressure: DN6-DN50,PN<4.0MPA  
DN65-DN150,PN<1.6MPA  
DN200-DN600,PN<1.0MPA  
DN700-DN2000,PN<0.6MPA
- Response time: 0.02s
- Lining Material: Rubber, F46,PTFE,PU,PFA
- Electrodes: 316L,HastelloyC,platinum,tantalum, titanium,tungsten carbide
- Process connection material: stainless steel
- Protection type: IP65(compact version), IP68(remote version)
- Display: Graphical display
- Unit: L、m3、Kg、t/s、min、h
- Medium temperature: Rubber (80℃)  
F46 (150℃)  
PTFE (120℃)  
PU (60℃)  
PFA (180℃)
- Cable gland: 10meters(standard)
- Power supply: 100-240VAC 24VDC
- Transmitter: 4-20mA, pulse, RS485, Hart protocol
- Conductivity: > 5 μS/cm, (20 μS/cm for demineralized water)
- ATEX: NO

## Flow rate

Diameter (mm)	Flow range (m3/h)		
10	0.02827-0.25	0.3-1.6	2.0-3.3924
15	0.0636-0.6	0.8-3.0	4.0-7.632
20	0.131-1.0	1.2-5.0	6.0-13.6
25	0.176-1.6	2.0-8.0	10-21
32	0.2895-2.5	3.0-12	16-35
40	0.4524-4.0	5.0-20	25-45
50	0.707-6.0	8.0-40	50-85
65	1.195-10	12-60	80-143
80	1.81-16	20-120	160-217
100	2.83-25	30-160	200-339
125	4.42-40	50-250	300-530
150	6.36-60	80-400	500-763
200	11.3-100	120-600	800-1357
250	17.7-160	200-800	1000-2120
300	25.45-250	300-1200	1600-3054
350	34.6-300	400-1600	2000-4157
400	45.2-400	500-2000	2500-5429
450	57.3-500	600-2500	3000-6871
500	70.7-600	800-3000	4000-8482
600	102-800	1000-4000	5000-12216
700	139-1200	1600-5000	6000-16620
800	181-1600	2000-6000	8000-21720
900	229-1600	2000-8000	10000-27480
1000	283-2000	2500-10000	12000-33924
1200	407-2500	3000-12000	16000-48833
1400	554-3000	4000-16000	20000-66468
1600	723-4000	5000-20000	27000-86815

## Instrument Selection

### ▪ Selet lining

Lining material	Main Performance	Applications
Teflon	1.The most steady material in plastics which is resistibal to boiling hydrochloric acid, vitriolandqua fortis as well as strong alkali and organic impregnates. 2.Not be perfect in abrasion resistance.	Strong corrosive mediums such as strong acid and alkali
PFA	Having the same abrasion resistance with PTFE. Having strong ability of load pressure resistance.	Applicable in state of load pressure
F46	1.Have the same abrasion resistance with PTFE. 2.Resistable for low abrasion. 3.Having strong resistance to load pressure.	1.The same as PTFE. 2.Applicable in mediums of low abrasion.
Neoprene	1.Be of good elasticity,retractility and abrasion resistance. 2.Be resistant to low acid,alkali and salt but not for oxidation mediums.	Water,sewage and slurry, mineral serosity of low abrasion.
Polyurethane	1.Be of good abrasion resistibility. 2.Not be perfect in acid/alkali resisitance. 3.Can't be used for water mixed with organic impregnants.	Applicable in mineral serosity,slurry and coal slurry of high abrasion.

- Selet electrode

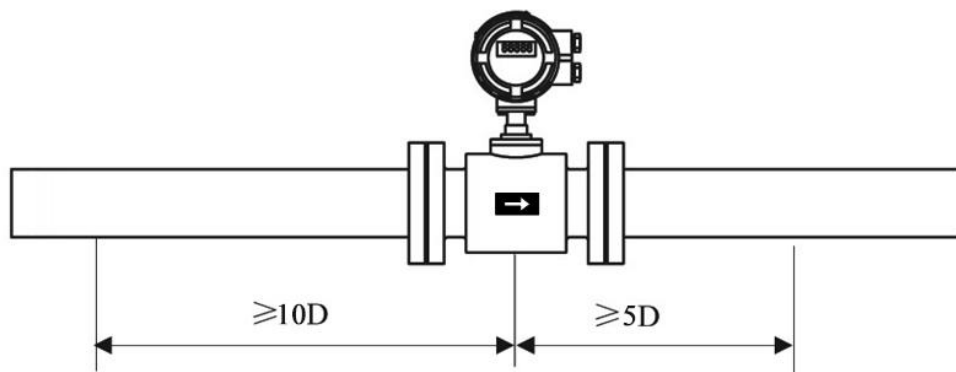
Electrode material	Applications
Stainless steel SUS316	Applicable in water,sewage and corrosive mediums.Widely used in industries of petrol, chemistry,carbamide,etc
Stainless steel covered with tungsten carbide	Applicable in mediums of no corrosive and low abrasion.
Hastelloy B (HB)	Having strong resistance to hydrochloric acid of any consistence which is below bioling piont. Also resistable againstvitriol,phosphate, hydrofluoricacid,organic acid etc which are oxidable acid,alkali and non-oxidable salt.
Hastelloy C (HC)	Be resistant to oxidable acid such as nitric acid,mixed acid as well as oxidable salt such as Fe <sup>+++</sup> ,Cu <sup>++</sup> and sea water
Titanium	Applicable in seawater,and kinds of chloride,hypochlorite salt,oxidable acid(including fuming nitric acid),organic acid,alkali etc.Not resistant to a pure reducing acid(such as sulphuric acid, hydrochloric acid)corrosion. But if acid contains antioxidant(such as Fe <sup>3+</sup> ,Cu <sup>2+</sup> )is greatly reduce corrosion.
Tantalum	In addition to hydrofluoric acid, fuming sulfuric acid, alkali remaining outside chemicals, including boiling hydrochloric acid
Platinum-iridium	Almost be applicable in all chemical mediums except for aqua fortis,ammonium salt.

## Installation

- The measuring pipe must always be full.
  - The flow direction must match the identification marking
  - Install the devices without any mechanical tension (torsion, bending).
  - Use a flange seal made from a material that is compatible with the medium and the medium temperature.
  - Seals should not extend into the flow area, since any turbulence affects the device accuracy.
  - The pipeline must not exert any inadmissible forces or torque on the device.
  - Install remote mount transmitters at a location that is largely free of vibration.
  - Do not expose the transmitter to direct sunlight; provide sun protection if necessary.
- **Inlet and outlet runs**

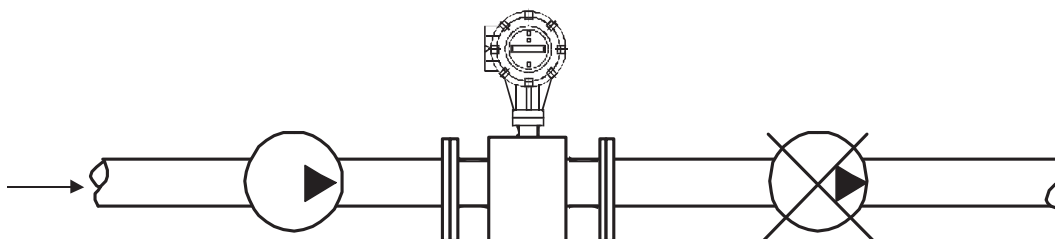
The following inlet and outlet runs must be observed in order to meet accuracy specifications:

- Inlet run  $\geq 10 \times DN$
- Outlet run  $\geq 5 \times DN$



▪ **Installation with pumps**

The sensor should only be installed behind the pump.

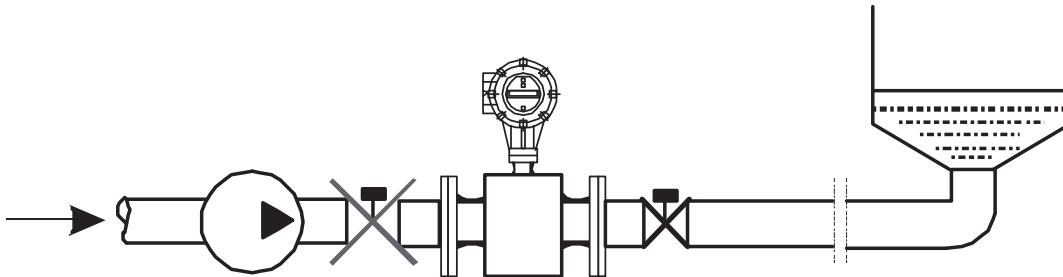


**Note!**

- The sensor should never be installed in front of the pump in order to avoid the risk of low pressure, and thus damage to the measuring tube.

### ▪ Installation with pumps

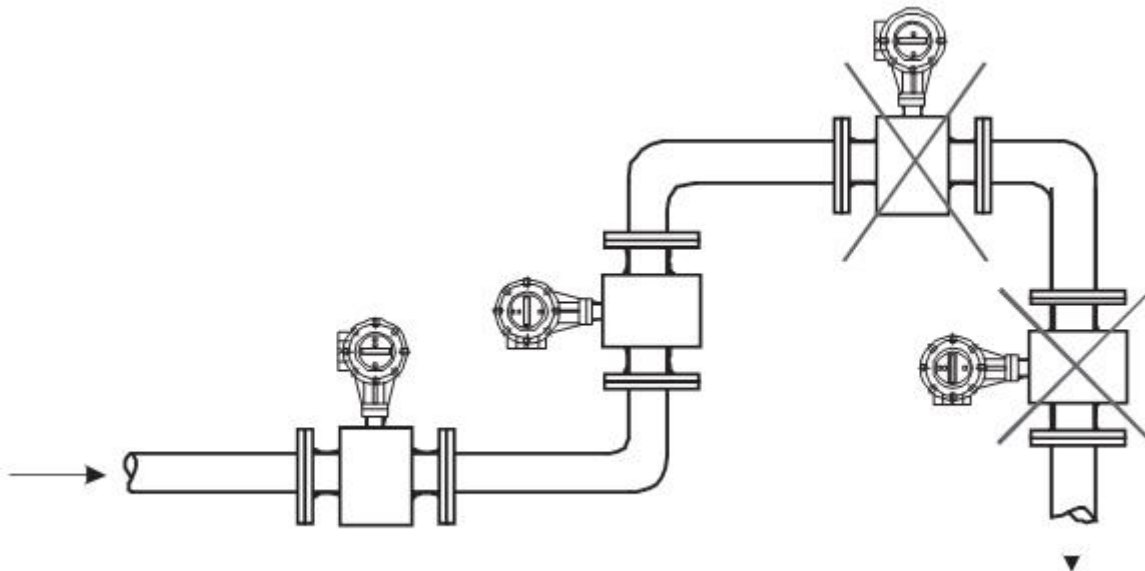
The sensor should only be installed in front of a control valve



### Note!

• The sensor should never be installed behind the valve in order to avoid the risk of low pressure, and thus damage to the measuring tube.

### ▪ Bends



### Note!

Entrained air bubble formation in the measuring tube can result in an increase in measuring errors. For this reason, the following mounting locations should be **avoided**:

- Highest point of a pipeline. Risk of air accumulating!
- Directly upstream from a free pipe outlet in a vertical pipeline. Risk of pipe not filling correctly!



## Ordering Code

Electromagnetic flowmeter																		
Model															Description			
LDG-SUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Type	M1														Compact type			
	M2														Remote type			
Pipe size		DNXX													DN10 - DN2000			
Accuracy				J1											1.00%			
				J2													0.50%	
Output				O0											No output			
				O1													Pulse output	
				O2														4-20mA output
Communication				D0											No			
				D1													RS232	
				D2														RS485
				D3														HART
Installation				I1											Thread installation			
				I2													Flange installation	
				I3														Clamp mounting
				I4														Clamp installation
Power supply				V1											220VAC			
				V2													24VDC	
				V3													Battery powered	
Pressure rating				P1											0.6MPa			
				P2													1.0MPa	
				P3													1.6MPa	
				P4													2.5MPa	
				P5													4.0MPa	
				PZ														Others
Temperature rating				T1											≤60°C (CR/PU)			
				T2													≤120°C (F4/F46)	
				T3													≤150°C (PFA)	
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)
	L2				Polyurethane (PU)
	L3				F4/PTFE
	L4				Teflon (F46/FEP)
	L5				Tetrafluoroethylene (PFA)
Grounding	G0				No grounding
	G1				Grounding ring
	G2				Grounding electrode
	G3				Grounding screw
Body material	B1				Carbon steel
	B2				304 stainless steel
	B3				316 stainless steel
Ingress protection	IP1				IP65
	IP2				IP67
	IP3				IP68